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Flying Operations

T-1A OPERATIONS PROCEDURES

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This instruction implements AFPD 11-2, *Aircrew Operations*, and AFI 11-202, Volume 3, *General Flight Rules.* Along with major command (MAJCOM) and local procedures, this AFI prescribes standard operational procedures to be used by all aircrew operating Air Force T-1A aircraft. The MAJCOM/A3 is waiver authority for this instruction unless specified elsewhere. File a copy of all approved waivers with this instruction. This instruction applies to all Regular Air Force (RegAF), Air Force Reserve Command, government civil service employees and contract aircrew flying the T-1A. With the exception of associate instructor pilot personnel, this instruction does not apply to the Air National Guard. According to AFI 11-200, *Aircrew Training, Standardization/Evaluation, and General Operations Structure*, major commands (MAJCOM) will coordinate MAJCOM-level supplements through AETC/A3V and AF/A3O prior to publication. (T-1). Field units below MAJCOM level will coordinate their supplements through their parent MAJCOM OPR prior to publication. (T-1). Submit suggested improvements to this instruction on AF Form 847, *Recommendation for Change of Publication*, through standardization and evaluation (stan/eval) channels to the OPR. AF/A3O is approval authority for changes or revisions to this instruction. This publication requires the collection and or maintenance of information protected by the Privacy Act (PA) of 1974, 5 United States Code (USC) section 552a. The applicable Privacy Act System Notice(s) F011 AF XO A, Aviation Resource Management System (ARMS), is available online at: **http://www.defenselink.mil/privacy/notices/usaf**. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with Air Force Manual (AFMAN) 33-363, *Management of Records*, and disposed of in accordance with Air Force Records Information Management System (AFRIMS) Records Disposition Schedule (RDS). (T-1). The use of the name or mark of any specific manufacturer, commercial product, commodity, or service in this publication does not imply endorsement by the Air Force.

SUMMARY OF CHANGES

This publication has been revised and must be reviewed in its entirety. This revision incorporates senior officer qualification restriction (**1.6.1**); CSO sortie crew complement (**1.6.2**); PFPS clarification (**2.3**); local IFGs (**2.4.3**); fanfold checklist requirement (**3.1.2.1**); aircrew and ground personnel communication clarified (**3.1.1**); duplicate taxi clearance criteria deleted (**3.2.1**); added touch and go operational guidance for temperatures above 40 degrees C (**3.3.6.3.1**.); weight and balance example (**3.3.6.5**); minimum LDA requirement (**3.3.8.2**); feed-on takeoff (**3.3.8.6**); tactical pattern clarification (**3.3.12.1**); CSO restrictions (**3.4.2**); clarified night filing guidance (**3.5.4.1**); thunderstorm avoidance added (**3.7.1.6**); alternate guidance directed to AFI 11-202V3 AETC Sup (**3.7.2.2**); runway threshold elevation "THRE" verbiage added throughout document (**3.7.5.1**); GPS paragraph location swap for clarity (**3.8.4** and **3.8.8**); added "step down" fix clarification; maximum IAS for SR routes defined (**3.9.2**); offset maneuvering cloud clearances moved from training rules (**3.11.2.6**); clarified similar safety chase restriction (**3.3.6.3.1**.); "astern" references removed throughout document (**3.12.4**); added mandatory PM call for step down fix inside FAF (**3.14.1.4.4**); NAF/DO and appropriate AETC divisions changed throughout document (**3.16.1**); minimum equipment list changed for GPS (**Table 4.1**); declared distance added to multiple briefing guides (**Attachment 2** and **3**); added standardized checklists for Air Refueling and low level checklists for UPT (**Attachment 6**); added standardized low level checklists for UCT (**Attachment 6**); added T-1A Training Rules (**Attachment 7**); deleted old attachment 6 for touch and go distances.

Chapter 1

GENERAL INFORMATION

1.1. Roles and Responsibilities. This instruction outlines aircrew procedures applicable to safe operation of the T-1A. With the complementary references cited, this instruction prescribes standard operational procedures to be used by all aircrew operating T-1A aircraft. Errors, omissions, or recommended changes to this publication are handled in accordance with **paragraph** 1.5 of this instruction. (T-1).

1.2. Pilot-In-Command Responsibility (Aircraft Commander). In conjunction with other governing directives, this instruction prescribes T-1A procedures under most circumstances, but is not to be used as a substitute for sound judgment or common sense. The pilot-in-command (PIC) is ultimately responsible for the safe and effective operation of the aircraft. (T-1).

1.3. Deviations. Deviations from the procedures in this instruction require specific approval of the MAJCOM/A3 unless an urgent requirement or an aircraft emergency dictates otherwise. In such a case, the PIC will take the appropriate action to safely recover the aircraft. (T-1).

1.4. References. The primary references for T-1A operations are technical order (TO) 1T-1A-1, *Flight Manual-T-1A Series Aircraft,* and applicable supplements; AFMAN 11-247, *T-1A Flying Fundamentals;* and this instruction. Training units may develop local standards from the procedures contained in these documents. Local standards may be used to augment initial and mission qualification training defined by AFI 11-2T-1, Volume 1, *T-1A Aircrew Training*. Although local standards may expand these basic procedures, in no case will they be less restrictive. (T-1).

1.5. Recommended Changes and Waivers:

1.5.1. Submit suggested improvements to this instruction on AF Form 847, *Recommendation for Change of Publication,* to the parent MAJCOM through standardization/evaluation (stan/eval) channels. AF Form 847 is listed as an adopted form in AFI 11-215, *USAF Flight Manuals Program [FMP]*. Refer to that publication for guidance on filling out the form. (T-1).

1.5.2. USAF/A3O is the approval authority for changes or revisions to this instruction. (T-1).

1.5.3. Policy and procedures are enacted to provide quality and consistency in training and evaluation whether at an undergraduate or graduate level. Occasionally, unique circumstances may warrant special consideration and possible waiver of policy provisions. At the same time, because it is important to preserve fidelity of training, evaluation, and policy implementation throughout the command, a process must be established for review of proposed waivers. (T-1).

1.5.4. Waivers that change the intent of the policy outlined in this instruction are not authorized without AETC/A2/3/10 (T-2) approval. Unless otherwise stated in this document, Wing/CCs (T-3) are the approval authority for individual personnel exceptions to the policy outlined in this instruction caused by special or unusual circumstances. (T-1).

1.5.5. AETC Units. Coordinate T-2 waivers through AETC/A3VO as appropriate. Squadron commanders will submit all T-2 waiver requests through command channels in

electronic format. Waiver requests must provide justification why the individual or unit cannot comply with requirements. AETC/A3VO and the units will file a copy of approved waivers to this volume according to AFI 33-360, Publications and Forms Management. (T-1).

1.5.6. Operations Group (OG) Commander. The OG/CC of local supplements will handle waivers to unit supplemental guidance. (T-2).

1.6. Definition of Specific Terms. For the purposes of this instruction, the term "student" refers to any crewmember enrolled in specialized undergraduate pilot training (SUPT), undergraduate combat systems officer training (UCT), pilot instructor training, fixed-wing qualification training and combat systems officer (CSO) instructor training. The use of the term "CSO" refers to students enrolled in UCT and instructor combat systems officer (ICSO) upgrade training; and qualified CSOs and ICSOs.

1.7. Crew Requirements. The minimum basic T-1A crew requirement is defined in TO 1T-1A-1, *Flight Manual-T-1A Series Aircraft.* When an individual not fully qualified as a T-1A pilot occupies either the pilot's (left) or copilot's (right) seat (for example, CSO, ICSO, UCT, SUPT, initial qualification, requalification, orientation) a current and qualified T-1A instructor pilot (IP) must occupy the other seat with immediate access to a set of flight controls. (***EXCEPTION:*** Single and/or double seat changes, and to meet physiological needs.) At no time will both the pilot and copilot's positions remain unoccupied. (T-1).

1.7.1. Senior Officers qualified using the senior officer syllabus must have a current and qualified Instructor Pilot at the other set of controls. (T-1).

1.7.2. **CSO Sorties**. The minimum crew complement will consist of a current and qualified T-1A instructor pilot in the left seat, and a T-1A qualified, instructor CSO, upgrade CSO, or student CSO in the right seat. (T-1).

1.7.2.1. Sorties in which an undergraduate CSO student occupies the right seat require a qualified T-1A instructor pilot in the left seat and a qualified T-1A instructor CSO in the jump seat. (T-1).

1.7.3. **Break-In-Training (BIT) Sorties.** (See AFI 11-2T-1, Volume 1, *T-1A Aircrew Training.*)

1.7.3.1. **Pilot.** The minimum crew complement will consist of a T-1A IP with immediate access to a set of flight controls and a rated, unqualified T-1A SUPT pilot graduate at the other set of flight controls. (T-1).

1.7.3.2. **CSO.** The minimum crew complement will consist of a qualified T-1A IP in the left (pilot) seat; and a rated, unqualified T-1A UCSO in the right (copilot) seat and a qualified T-1A instructor CSO in the jump seat. (T-1).

1.7.4. **Passenger-Carrying Sorties.** Minimum crew complement will consist of qualified T-1A pilots in both the left and right seats on any sortie carrying passengers (to include Mission Essential Personnel). See AFI 11-401, *Aviation Management*, for MEP requirements. (T-1).

Chapter 2

MISSION PLANNING

2.1. Responsibilities. The responsibility for mission planning is shared jointly by individual crewmembers and the operations functions of organizations.

2.2. General Procedures. Sufficient flight planning must be done to ensure safe mission accomplishment. AFI 11-202, Volume 3, *General Flight Rules*, specifies the minimum requirements.

2.3. Flight Planning Software. T-1 aircrews are authorized to use the Portable Flight Planning System (PFPS) software suite for mission planning IAW AFI 11-202, Volume 3.

2.4. Briefings and Debriefings:

2.4.1. **Minimum Briefing Times.** For student syllabus sorties, minimum briefing times are determined IAW the syllabus. For all other sorties, the minimum brief time will be 1 hour and 30 minutes prior to scheduled takeoff. The aircraft commander will determine briefing time requirements for off-station sorties. (T-3).

2.4.2. **Briefing Guides:**

2.4.2.1. The aircraft commander will brief all personnel on specific duties and responsibilities relating to safe mission accomplishment to include in-flight discipline. Aircrews should reference the appropriate briefing guides, located in Attachments 2, 3, and 4 to brief applicable items before each mission. Briefing guides are a reference list of items that may apply to particular missions. (T-2).

2.4.2.2. Items listed may be briefed in any sequence. Those items covered by written squadron standards and understood by all participants may be briefed as "standard." Each guide may be expanded as necessary to cover other important items of the flight. Brief only those items applicable to the particular mission and in sufficient detail to prevent any misunderstanding between crewmembers. (T-2).

2.4.2.3. The flight briefing will be structured to accommodate the capabilities of each crewmember in the flight. (T-2).

2.4.2.4. If appropriate, an alternate mission will be briefed for each flight. The alternate mission will be less complex than the primary and should parallel the primary mission. If the alternate mission does not parallel the primary mission, brief the specific mission elements that are different. Mission elements or events may be briefed airborne if practical and flight safety is not compromised. (T-2).

2.4.2.5. All missions, student and continuation training (CT), will be debriefed using the debriefing guide in Attachment 5 as a reference. (T-2).

2.4.3. **Local In-flight Guides (IFG) and/or Pilot Aids**

2.4.3.1. As a minimum unit-developed IFG or aircrew aids will include the following items: (T-3).

2.4.3.1.1. Briefing guides.

2.4.3.1.2. Local ultra-high frequency (UHF) and very high frequency (VHF) channelization.

2.4.3.1.3. Appropriate airfield diagrams.

2.4.3.1.4. Emergency information (for example, emergency action checklists, no-radio procedures, divert information).

2.4.3.1.5. Cross-country procedures to include command and control and aircraft servicing information.

2.4.3.1.6. Operational risk management (ORM) guides and checklists.

2.4.3.1.7. Training rules.

Chapter 3

NORMAL OPERATING PROCEDURES

3.1. Preflight:

3.1.1. When ground personnel are on headset during preflight activities, the primary method for communication is via ground intercom**.** When ground intercom is not used (e.g. at a FBO), the use of visual signals will be IAW AFI 11-218, *Aircraft Operation and Movement on the Ground,* and this instruction. Regardless of method used (intercom or visual), aircrew will ensure they receive proper acknowledgment from ground personnel prior to operating aircraft systems such as but not limited to; flaps, speedbrakes, flight controls and engine start. (T-1).

3.1.2. **Required Publications and Equipment:**

3.1.2.1. On all sorties, one aircrew member will carry a complete set of current aircraft technical orders (that is, TO 1T-1A-1, *Flight Manual*; TO 1T-1A-1-1, *Flight Manual, Appendix 1, Performance Data;* and TO 1T-1A-1-2, *Supplemental Flight Manual* [when operating CSO-modified aircraft]). All aircrew members are required to carry a current TO 1T-1A-1CL-1 (pilot's abbreviated flight crew checklist) or TO 1T-1A-1-2CL-1 (when operating CSO-modified aircraft) and a unit-developed IFG. All aircrew members are required to carry a current TO 1T-1A-1CL-1-1 Pilots' Fanfold Checklist or TO 1T-1A-2CL-1-1 Pilots' Fanfold Checklist (when operating CSO modified aircraft.) (T-2).

3.1.2.2. In addition to required publications, aircrews will carry a suitable terrain chart to cover the proposed route when flying outside the local area (e.g., Visual Flight Rules [VFR], Sectional Aeronautical Chart, Operational Navigation Chart [ONC], Tactical Pilotage Chart [TPC], Joint Operations Graphics [JOG]). (T-3).

3.1.2.3. A life raft is required for overwater flight unless the only overwater portion of the flight is during the departure or approach phase or if the aircraft remains within gliding distance of land. Life preservers should be carried onboard whenever a life raft is required. Reference AFI 11-301, Volume 1, *Aircrew Flight Equipment (AFE) Program,* and applicable lead-command directives for specific life preserver requirements. (T-1).

3.1.2.4. All aircrew members will have approved flight gloves in their possession while performing aircrew duties. In addition, aircrew members must wear these flight gloves during external aircraft inspection and servicing. (T-2).

3.1.2.5. Individuals are only authorized to utilize David Clark® headsets (model H10-76 or command-approved equivalent) in the T-1A. Noise-cancelling headsets are not approved for use in the T-1A. MAJCOM/A3V approval is required for use of alternative headsets after testing IAW applicable military standards and certification for specific use in the T-1A. (T-2).

3.1.3. **Aircraft Systems.** Operational checks flights (OCF) may be performed during student training sorties if the checks do not interfere with the training objectives.

3.1.4. **CSO-Modified T-1A Aircraft.** Aircrews are prohibited from utilizing the jump and instructor seat 110 Volt AC, 60 Hertz outlet and Ethernet port units for any personal

electronic devices. Only those devices certified and required for use with the CSO modification may be utilized. (T-2).

3.1.4.1. Aircrew will utilize MAJCOM/A3V-approved checklists for pre- and post-flight mission equipment setup. At a minimum, checklists will address power up and power down of jump and instructor laptops; testing of hand control units; and procedures to upload and download mission data. (T-2).

3.1.4.2. Aircraft performance and navigational data displayed on CSO monitors and laptops are for training use only and not certified for and will not be used as primary aircraft instrument or navigation sources. (T-1).

3.1.5. **Equipment Stowage.** Clothing and personal items should be stowed aft of the jump seat. Larger items of cargo will be carried in the aft cabin, using tiedowns or secured in a passenger seat. Do not place items in front of the crew entrance door or emergency escape hatch which may delay or prohibit emergency egress from the aircraft. (T-1).

3.1.6. **Storage of the Jump Seat.** When the crew compliment consists of two crewmembers, the jump seat will remain locked in the stowed position (full aft and full right). Required TOs must be stowed within arm's reach of the seat-belted crewmembers (using the jump seat is allowed, as long as the restraint belts are used to secure the TOs). The jump seat is not a primary crew position except as required by the UCT mission. (T-2).

3.1.7. **Foreign Object Damage (FOD).** To reduce the risk of FOD during ground operations:

3.1.7.1. Do not allow personnel to approach the crew entrance door or allow crewmembers to open the crew entrance door when both engines are running. Personnel may enter and exit the crew entrance door with the right engine operating and left engine shut down. (T-2).

3.1.7.2. Limit power during ground operations to approximately 70 percent N2 in congested areas. (T-2).

3.1.7.3. Avoid prop or jet blast. (T-2).

3.1.7.4. Do not place objects other than flight gloves on the flight deck glare shield to prevent scratching and abrasions to the windshield. (T-3).

3.1.7.5. Do not pass open containers of food or drinks over the center console, circuit breaker panel or aft CSO station console (modified T-1A aircraft). (T-3).

3.1.7.6. Do not place objects other than flight gloves or mission planning paperwork on the horizontal CSO workstation monitor and do not utilize the monitor as a writing surface. (T-3).

3.1.8. **Refueling:**

3.1.8.1. Do not refuel the aircraft with the engines running. Cell phone use is prohibited within 50 feet of aircraft refueling operations. (T-1).

3.1.8.2. Fuel anti-icing inhibitor, as required by TO, must be pre-mixed into fuel from the source (e.g. fuel truck) by qualified personnel and may not be manually mixed during aircraft refueling. (T-2).

3.2. Taxiing:

3.2.1. **Obstacle Clearance.** When obstacles affect only one wingtip, the marshaller may also act as the wing walker and direct the aircraft while monitoring the affected wingtip. This requirement does not apply at the home station when fixed taxi routes are marked and provide a minimum of 10 feet of wingtip clearance from obstacles and other aircraft. (T-2).

3.2.2. **Taxi Interval.** Do not taxi staggered. Maintain a minimum of 150 feet behind other aircraft while taxiing. (T-2).

3.2.3. **Ice and/or Snow Conditions.** Do not taxi during ice and/or snow conditions until all portions of the taxi route and runway have been checked for safe conditions. Conditions to consider are snow berm locations and reported taxiway runway condition reading (RCR) along the planned taxi route. With ice or snow present, taxi on centerline with a minimum of 300 feet of spacing behind other aircraft. For removal of snow and ice, refer to the aircraft TO command guidance, and TO 42C-1-2, *Anti-icing, De-icing, and Defrosting of Parked Aircraft.* (T-2).

3.2.4. **CSOs.** CSOs will not taxi the aircraft, except as required to accomplish the "Taxi" checklist. (T-2).

3.3. Takeoff and Landing:

3.3.1. During engine run up, the crewmember not in control of the aircraft will guard the brakes and be ready to assume control of the aircraft in case of brake failure. (T-2).

3.3.2. Touch-and-go operations require a qualified IP at a direct set of controls. (T-2).

3.3.3. Touch-and-go operations are prohibited with an undergraduate or BIT CSO (see AFI 11-2T-1, Volume 1, definition) at a direct set of controls, regardless of IP presence. (T-2).

3.3.4. **Fuel:**

3.3.4.1. The T-1A will normally take off with a full fuel load from the home field. The aircraft commander will decide whether to take off at the home field or out base with less than a full fuel load. Factors to consider include weight and balance, mission requirements, aircraft performance, weather conditions and fuel conservation. (T-3).

3.3.4.2. Declare "minimum" or "emergency fuel" to the controlling agency any time it becomes apparent the fuel remaining at final touchdown will be less than the requirements indicated in **paragraphs 3.3.4.3** and **3.3.4.4**. After declaring minimum or emergency fuel, add the fuel status call and amount of fuel remaining (in minutes) to each new air traffic control facility. Once established in the local traffic pattern, add fuel status with each radio transmission. (T-2).

3.3.4.3. Minimum fuel for the T-1A is 500 pounds. (T-2).

3.3.4.4. Emergency fuel for the T-1A is 300 pounds. (T-2).

3.3.4.5. Aircrews must be aware that minimum fuel for landing may be greater than the fuel requirements of **paragraphs 3.3.4.3** and **3.3.4.4**, to ensure aircraft center of gravity limitations are not exceeded in some configurations or aircrew and/or passenger and/or cargo complements. If a form F requires fuel to be in the tank to remain within CG, crews will not plan on using this fuel for the planned sortie. Example: If the form F

requires that 237 pounds be on board to remain within landing CG, then the crew will have a new minimum fuel of 737 pounds and new emergency fuel of 537 pounds. (T-2).

3.3.5. **Performance Data.** The minimum climbout factor for all takeoffs is 2.5. Reference Zero will occur no later than the departure end of the runway for all initial takeoffs and touch-and-go departures. (T-2).

3.3.6. **Runway: Note:** The minimum usable runway for takeoff, touch-and-go and landing is computed between arresting cables located on or above the runway surface. (T-2).

3.3.6.1. The minimum runway length for T-1A takeoffs is 6,000 feet, critical field length (CFL), or the distance required to reach reference zero whichever is greater. ***EXCEPTION*:** Reference Zero calculations may take into account runway distance past a departure end arresting cable, however in no case may "Reference Zero" occur past the departure end of the runway. (T-2).

3.3.6.2. The minimum runway length for full-stop landings is 6,000 feet or computed landing distance, whichever is greater. If a runway has landing distance available (LDA), the LDA must be at least 6,000 feet or landing distance whichever is greater. If the tabular data landing distance is within 1,000 feet of the total usable runway for landing, aircrews must use the longer of the performance chart or tabular data landing distance. If the tabular data landing distance is not within 1,000 feet of runway available, aircrews may use tabular data landing. (T-2).

3.3.6.3. The minimum usable runway length for touch-and-go landings must be equal to or greater than the applicable touch-and-go distance but never less than 6,000 feet. (See T.O. 1T-1A-1-1 for touch-and-go distances for 15,500 to 12,000 pounds gross weight.) Touch-and-go distances reflect the most restrictive of the go or stop option from the appropriate decision point (flaps and throttles). From these points, the applicable touch-and-go distance allows acceleration, rotation, and climb to Reference Zero by departure end, or deceleration to stop within the runway remaining. For airfields with Declared Distances as defined in AFMAN 11-217, Volume 1, *Instrument Flight Procedures,* aircrews will use the shortest of Take-Off Runway Available (TORA), Accelerate-Stop Distance Available (ASDA) or Landing Distance Available (LDA) to determine the usable runway length for touch-and-go landings. (T-2).

3.3.6.3.1. Touch-and-go 30-flap and 10-flap landings may be accomplished at 41 and 42 degrees Celsius if all of the following conditions are met (no-flap touch-and-go landings are not authorized above 40 degrees): (T-2).

3.3.6.3.1.1. The aircraft commander will ensure that PFPS is used to accurately meet the required climb gradient. The required climb gradient may be reduced IAW AFI 11-202 Volume 3.

3.3.6.3.1.2. Aircraft gross weight is 14,000 pounds or less.

3.3.6.3.1.3. Field pressure altitude is 3,000 feet or less.

3.3.6.3.1.4. Runway is dry.

3.3.6.3.1.5. The shortest of TORA, ASDA, or LDA is greater than 9,000 feet.

3.3.6.4. Minimum runway width for single-ship takeoffs and landings is 100 feet. (T-2).

3.3.6.5. Minimum runway width for normal formation takeoffs is 150 feet. If the runway is less than 150 feet wide, use the feed-on procedure for takeoff as described in AFMAN 11-247. The minimum runway width for feed–on takeoffs is 100 feet. (T-2).

3.3.6.6. Takeoffs and touch-and-go landings will not be accomplished on unplowed runways when ice or snow is present. These operations are permitted on plowed runways provided the plowed portion is a minimum of 100 feet wide and meets the minimum length requirements of **paragraphs** 3.3.8.1 through **3.3.8.3**. Additionally, the RCR of the plowed surface must be 12 or greater. (T-2).

3.3.6.7. The operations group commander may waive the requirements in **paragraphs** 3.3.6.1 through 3.3.6.6 on a case-by-case basis.

3.3.7. **Spacing:**

3.3.7.1. **Takeoff.** Do not begin the takeoff roll until preceding aircraft are airborne or clear of the runway. ***EXCEPTION*:** Does not apply to the wingman during 15-second interval formation takeoffs. (T-2).

3.3.7.2. **Landing.** Land on runway centerline with 6,000 feet minimum spacing behind other aircraft unless the aircraft is airborne. This includes touch-and-go and full stop landings, and applies to single-ship and formation operations. (T-2).

3.3.8. **Low Approach.** During low approaches, do not allow the aircraft to touch down. A restricted low approach is defined as no lower than 500 feet above ground level (AGL) or as directed by the controlling agency. Minimum altitude to initiate a practice single-engine go-around is 100 feet AGL. (T-2).

3.3.9. **Crosswind Limitations.** The maximum crosswind limitation for takeoff and landing is 25 knots for a dry runway, 15 knots for a wet runway, and 10 knots for an icy runway. (T-2).

3.3.10. **Traffic Patterns:**

3.3.10.1. **Tactical Pattern.** A tactical pattern is one turn to downwind and one turn to final either from initial or the closed pull up. Single-engine and no-flap tactical patterns are prohibited (simulated or actual). If necessary to configure during the break, establish the desired AOB prior to any configuration change. The minimum speed in the break is 160 KIAS. (T-2).

3.3.10.2. **Closed Pattern (Tactical or Rectangular).** The minimum airspeed to begin the closed pull-up is 160 knots indicated airspeed (KIAS). Maintain 160 KIAS minimum during the pull-up. On downwind, maintain minimum speeds for fuel weight and configuration. (T-2).

3.3.10.3. **Bank Angles.** Pilots should adjust pattern spacing as to not exceed 30 degrees of bank in the final turn or on final. Pilots should not exceed 45 degrees of bank anywhere in the traffic pattern, to include the break during tactical overhead patterns. (T-2).

3.3.11. **No-Flap Landings.** Do not practice no-flap full-stop landings. (T-2).

3.3.12. **Circling Approaches.** Do not practice single-engine circling approaches or single-engine low-closed patterns. (T-2).

3.3.13. **Simulated Dual Engine Flameout Patterns**. Do not practice simulated dual engine flameout patterns. (T-2).

3.3.14. **Crew Seat Change Procedures:**

3.3.14.1. The minimum altitude for seat changes is 1,000 feet AGL. Seat changes will not be conducted during a critical phase of flight. (T-2).

3.3.14.2. Crew seat changes on the ground will not be performed with the engines running unless there is a pilot at the controls at all times to guard the brakes. Seat changes with only two crewmembers on board will not be performed with the engines running. (T-2).

3.3.14.3. At the discretion of the aircraft commander, CSOs may unstrap shoulder harnesses when occupying the jump seat and aft crew seats to facilitate training during air intercept operations or the low-level portion of formal training syllabus; and continuation training sorties.

3.3.15. **Delayed Braking:**

3.3.15.1. Delayed braking is defined as the time and/or distance between aircraft touchdown and brake application. Delayed braking is also defined as the time and/or distance between initiating an abort and brake application. Although utilized to reduce brake energy, *delayed braking increases landing distance significantly.*

3.3.15.2. Do not let concern over brake energy override good judgment in stopping the aircraft. Apply the brakes based on the runway remaining, not on hot brakes speed. Apply brakes as necessary to ensure the aircraft does not depart the runway. Do not hesitate to use maximum braking if necessary. **Note:** Charted stopping distances do not account for possible decreased braking effectiveness due to rubber deposits, especially when wet. (T-2).

3.3.15.3. The ability to delay braking during an abort is dependent upon several factors (e.g. aircraft speed, runway remaining, RCR, inoperative aircraft systems, tailwind component, etc.). Upon initiating an abort, if any doubt exists as to whether the aircraft will stop in the confines of the runway, immediately apply maximum braking until the aircraft has slowed to a safe taxi speed. As a guide, do not delay braking if the runway remaining is less than RCR-corrected CFL.

3.3.15.4. When landing, do not delay braking when runway remaining is less than the RCR corrected landing distance. The flare component of the landing distance is not calculated separately and provides an added margin of safety. Refer to TO 1T-1A-1-1 for additional assumptions concerning landing distance and landing ground roll distance calculations. If any doubt exists as to whether the aircraft will stop in the runway remaining, immediately apply maximum braking until the aircraft has slowed to a safe taxi speed. (T-2).

3.3.16. **After landing.** Do not perform any after landing checklist items until the aircraft is clear of the active runway. (T-2).

3.4. Maneuvering Parameters:

3.4.1. **C ritical Phases of Flight.** The following flight regimes are critical phases of flight: (T-2).

3.4.1.1. Takeoffs and landings.

3.4.1.2. Traffic pattern operations (instrument and visual) after initiating the base turn.

3.4.1.3. Low-level navigation (below 1,000 feet AGL).

3.4.1.4. Precontact (astern) and contact positions.

3.4.1.5. Airdrop maneuver (IP to target).

3.4.2. **CSOs will only perform pilot monitoring duties. (T-2)**

3.4.2.1. Exceptions: CSOs in CRS initial qualification training may fly autopilot coupled approaches with an IP in the left seat. These CSOs will adhere to the following restrictions: (T-2).

3.4.2.1.1. CSOs will only fly with the autopilot engaged.

3.4.2.1.2. Minimum weather for CSO-flown autopilot coupled instrument approaches is a ceiling of 700 feet and visibility of 2 sm, or approach minimum weather, whichever is greater.

3.4.2.1.3. Transfer of aircraft control from the CSO to the pilot during autopilot coupled instrument approaches will be initiated no later than 100 feet above approach minimums and no later than the missed approach point, but in no case lower than 300 feet above touchdown zone elevation (TDZE) or airfield elevation (approaches terminating in a circle).

3.4.2.1.4. CSOs are prohibited from flying the aircraft below 1,000 feet AGL unless being radar vectored for an IAP, cleared direct the initial approach fix for an IAP, or established on a segment of the approach.

3.4.2.1.5. CSOs are prohibited from controlling the aircraft during visual traffic pattern operations, go-around and/or missed approach and circling to land procedures and will only perform pilot monitoring duties.

3.4.2.1.6. CSOs are prohibited from controlling the aircraft during takeoffs and landings (to include touch-and-goes) and will only perform copilot or pilot monitoring duties.

3.4.3. **Cruise Checklist.** If actual cruise time will be a short duration (approximately 15 minutes), the cruise checklist does not have to be accomplished. Aircrews transiting between airfields located in close proximity to each other (approximately 15 minutes) and remaining below transition level, may accomplish the pattern checklist in lieu of the after-takeoff, climb, cruise, descent, and before-landing checklists. (T-2).

3.4.4. **Transfer of Aircraft Control.** At all times**,** crew members must know who has control of the aircraft. Transfer of aircraft control will be made with the statement "Pilot (or copilot), you have the aircraft." The individual receiving control of the aircraft will acknowledge "Pilot (or copilot) has the aircraft." The individual assuming control of the aircraft will maintain control until relinquishing it as stated above. (T-2).

3.4.4.1. Crew members occupying the jump seat are prohibited from manipulating the autopilot controls or throttles. (T-2).

3.4.5. **Altitudes:**

3.4.5.1. Minimum altitude for visual flight routes VFR point-to-point navigation is 3,000 feet AGL. Aircrew may descend below 3,000 feet AGL as required for low-level entry/VFR arrival. Do not descend outside of the area covered by the low-level or VFR arrival chart. If flying below 3,000 feet AGL, the chart must be annotated with applicable vertical obstruction data. (T-2).

3.4.5.2. Complete approach to stalls, traffic pattern stalls, slow flight, unusual attitudes, and flight characteristic demonstrations above 5,000 feet AGL.

3.4.6. **Weather Requirements.** Approach to stalls, traffic pattern stalls, slow flight, unusual attitudes, steep turns and flight characteristics demonstrations will be conducted in day visual meteorological conditions (VMC). (T-2).

3.4.7. **Stalls.** Do not practice approach to stalls or traffic pattern stalls beyond the stick shaker. **Note:** A qualified IP must be at a direct set of controls for all practice approach to stall or traffic pattern stall training. (T-2).

3.4.8. **Asymmetrical Thrust Demonstration.** The yaw damper may be on or off. The high speed maneuver will be performed at approximately 220 KIAS and the low speed portion at approximately 150 KIAS. Calculate and use a maximum continuous thrust (MCT) to avoid over boosting the engines. (T-2).

3.4.9. **Yaw Damper Failure Demonstration.** The demonstration must be conducted below flight level (FL) 280. (T-2).

3.4.10. **Unusual Attitudes.** Initiate recoveries above 130 KIAS and below 270 KIAS. Do not exceed 45 degrees angle of bank. Maximum pitch attitudes are 25 degrees nose up and 20 degrees nose down. ompute and use *no more than* MCT to avoid exceeding engine limitations. (T-2).

3.5. Night Operations:

3.5.1. **Night Prohibited Maneuvers.** In addition to the maneuvers listed in **paragraph 3.4.5**., the following missions are prohibited at night: (T-2).

3.5.1.1. Formation.

3.5.1.2. Low level navigation.

3.5.1.3. Air intercept.

3.5.2. **Taxiing.** Taxi spacing will be a minimum of 300 feet and on taxiway center line. The landing/taxi lights will normally be used during all night taxiing. ***EXCEPTION:*** Landing and/or taxi lights may be turned off when they might interfere with the vision of the pilots of an aircraft landing or taking off. Pilots will bring the aircraft to a stop when the area cannot be visually and safely cleared. (T-2).

3.5.3. **Pattern Restrictions.** Night VFR rectangular patterns, tactical patterns, visual straight-in approaches and circling approaches may be flown with the following restrictions: (T-2).

3.5.3.1. Simulated single-engine and no-flap approaches and patterns, as well as, circling approaches may be flown at night if the ceiling and visibility is at least 2,000 feet and 3 statute miles (sm) or circling minimums, whichever is greater.

3.5.3.2. Fields used for this training must be familiar; that is, instructors must have accomplished either T-1A daylight VFR pattern operations or a daylight circling approach at the airfield prior to night operations.

3.5.3.3. Visual or instrument glide path guidance (including global positioning system (GPS) vertical navigation received from a published area navigation (RNAV) instrument approach) must be available and used for all off-station night landings.

3.5.4. **Filing:**

3.5.4.1. Night operations require the filed destination and alternate (when required) to have an operable straight-in approach and glide path guidance. Acceptable forms of glide path guidance are visual lighting systems, precision guidance systems, and also include GPS vertical navigation retrieved from a published RNAV instrument approach. Aircrew may perform enroute instrument approach work at facilities without glide path guidance, but may not descend below the minimum descent altitude (MDA). Note: For landing out of night circling approaches, the only runway required to have glide path guidance is the runway of intended landing. (T-3)

3.5.5. **Lighting.** If requested by runway supervisory unit controllers or the air traffic control tower, aircrews may turn off strobe lights during the hours of darkness while in the home base traffic pattern. (T-3).

3.6. Take-off and Landing Minimums and Pilot Weather Category (PWC). PWCs are designed to reduce the exposure of pilots with limited experience to the risks inherent during periods of low ceiling and visibility. See AFI 11-2T-1, Volume 1, for PWC certification requirements.

3.6.1. **Requirements:**

3.6.1.1. Certified PWC 1 pilots require weather equivalent to published ceiling and visibility approach minimums. (T-2).

3.6.1.2. PWC 2 pilots require weather minimums of no less than a ceiling of 300 feet and visibility of 1 sm (5,000 feet runway visual range [RVR]) or published approach minimums, whichever is greater. ***EXCEPTION:*** PWC 2 pilots may utilize published ceiling and visibility approach minimums at home station. (T-2).

3.6.1.3. Published ceiling and visibility approach minimums may be utilized if at least one certified PWC 1 pilot is occupying one of the pilot seats. (T-2).

3.6.1.4. When overriding mission requirements dictate, operations group commanders may individually authorize any qualified T-1A pilot to use published approach minimums. (T-3).

3.7. Weather and Instrument Flight Rules (IFR):

3.7.1. **Weather Restrictions:**

3.7.1.1. The T-1A will not be flown in areas of forecast or reported severe turbulence, severe icing, freezing rain, or freezing drizzle. If severe icing or turbulence is encountered on a mission, but was not forecast, notify appropriate weather personnel or Air Traffic Control (ATC). (T-2).

3.7.1.2. Do not cruise or conduct multiple pattern operations in actual moderate icing conditions. (T-2).

3.7.1.3. If required weather minimums cannot be maintained during a low level, abort the route. (T-2).

3.7.1.4. Do not exceed 30 degrees of bank in instrument meteorological conditions (IMC) unless safety of flight dictates otherwise. (T-2).

3.7.1.5. Aircrews will utilize all means necessary (ATC, WX radar, PIREPS, SOF) to avoid thunderstorms by 20 NM at or above FL 230 and 10 NM below FL 230. (T-2).

3.7.2. **Filing:**

3.7.2.1. **Destination.** Do not file to a destination unless the ceiling and visibility for the estimated time of arrival (ETA) (plus or minus 1 hour) is at or above the appropriate PWC or suitable published minimums, whichever is greater. ***EXCEPTION:*** If two or more suitable alternate airfields are available, aircrews may file flight plans to the home field when the terminal weather is forecast to be below published landing minimums. If this exception is used, aircrews will compute divert fuel for the most distant alternate. (T-2).

3.7.2.2. **Alternate.** See AFI 11-202, Volume 3 and AETC Sup.

3.7.3. **Remote or Island Destination.** Aircrews going to a remote or island destination will have fuel on board to hold 1 hour and 15 minutes (1+15) at the destination fix in place of an alternate. Forecast weather will meet the following restrictions for ETA plus 2 hours: (T-2).

3.7.3.1. The prevailing surface crosswind component must be within operational limits IAW paragraph 3.3.9.

3.7.3.2. When filing to the remote or island destination, the precision or nonprecison approach selected must have both the ceiling and visibility be at or exceed the published minima. If a precision approach is available, the ceiling and/or visibility may be intermittently below the non-precision approach minima but in no case will it be lower than the precision approach weather minima. Furthermore, for filing purposes, an airborne surveillance radar (ASR) approach will not be used as the airfield's nonprecision approach.

3.7.4. **Takeoff:**

3.7.4.1. **Minimums.** Base the decision to launch local (home station) sorties on the existing weather and forecast for planned landing plus 1 hour. Base the decision to launch non-local (off-station) sorties on the existing weather at takeoff time. Pilots will utilize ceiling *and* visibility to determine adequate departure weather. PWC 2 pilots require a ceiling of at least 300 feet and visibility of 1 sm or published suitable approach minimums, whichever is higher, unless flying with a PWC 1 pilot. ***EXCEPTION:*** PWC

2 pilots may use suitable published approach minimums less than 300 feet and 1 sm if departing the pilot's home station. (T-2).

3.7.4.2. **IFR Departures.** In addition to the approved IFR departure methods outlined in AFI 11-202, Volume 3, and AFMAN 11-217, Volume 1, aircrew members have the following restrictions: (T-2).

3.7.4.2.1. **Unable to Meet Required Climb Gradient.** When higher priority methods of departing IFR are not possible and if authorized according to AFI 11-202, Volume 3, aircrews may depart VFR or climb in VMC to a safe IFR altitude (e.g. Min Enroute Altitude, Min Safe Altitude, etc.) provided a minimum 2.5 climbout factor is met, and the weather permits a VMC emergency return to the departure field from an appropriate minimum IFR altitude. (T-2).

3.7.4.2.2. **Visual Climb Over Airport (VCOA).** Pilots may fly published VCOAs after completion of MAJCOM-approved training. **Note:** Ensure airspeeds during maneuvering are appropriate for aircraft configuration and bank angle. Target airspeed during VCOA departure is 180 KIAS. (T-2).

3.7.5. **Penetration and Approach.** During actual IMC, a precision approach (instrument landing system [ILS] or precision approach radar [PAR]) monitored by surveillance radar is the preferred approach. This does not prevent instrument training for other types of approaches if the ceiling and visibility are at or above required minimums for the approach being flown. (T-2).

3.7.5.1. After commencing a penetration or approach, if weather subsequently is reported below the required minimums (ceiling *or* visibility), the approach may be continued to a missed approach or landing. Aircrew must ensure the aircraft has sufficient fuel to execute a missed approach and land at the alternate airfield with required fuel reserves. PWC 2 decision height (DH), decision altitude (DA) or MDA will be determined by reference to the runway threshold elevation (THRE) or touchdown zone elevation (TDZE) for straight-in approaches and field elevation for circling approaches. Use field elevation if THRE or TDZE is unavailable. (T-2).

3.7.5.2. The use of PWC 2 minimums on a precision approach ILS, PAR or a GPS approach flown to lateral navigation (LNAV)/vertical navigation (VNAV) minimums may require pilots to execute a missed approach prior to the published DH/DA. In these instances, upon reaching PWC 2 minimums and making the decision not to continue the approach, the pilot should start a climb immediately while proceeding to the missed approach point (MAP) or missed approach waypoint (MAWP). Upon reaching the MAP/MAWP, continue the missed approach procedure or ATC issued climb out instructions, as applicable. (T-2).

3.7.5.3. PWC 2 pilots may set published approach weather minimums if the weather is equal to or greater than 1,500 feet and 3 sm (ceiling and visibility). If the reported weather is below 1,500 feet and 3 sm, PWC 2 pilots will set PWC 2 minimums or published approach minimums whichever is greater. Additionally, if a PWC 2 pilot having set appropriate PWC 2 approach minimums in the aircraft, encounters VMC during the approach and is able to maintain visual contact with the runway environment,

the PWC 2 pilot may elect to continue the approach to the published approach minimums. (T-2).

3.8. GPS Navigation:

3.8.1. The T-1A is Global Navigation Satellite System (GNSS)-equipped and meets the requirements for IFR GPS operations in the National Airspace System (NAS) Federal Aviation Administration (FAA)-controlled airspace) and is approved for RNAV 1 terminal (departure and arrival) and RNAV 2 en route operations ("T" and "Q" routes) (see TO 1T-1A-1 for aircraft certification information). T-1A aircrews may use GPS as the primary navigational source for all IFR operations from terminal departure through en route navigation to non-precision approach provided the aircraft contains a current Jeppesen® database. (T-2).

3.8.2. T-1A aircrews will check Jeppesen® NAVDATA Alerts/Change Notices/Notices to Airmen (NOTAM) prior to every flight in which the Jeppesen® database will be relied upon. (T-2).

3.8.3. The flight director must be utilized for all *published* RNAV operations in which GPS is the primary navigation source. Autopilot use is highly encouraged. (T-2).

3.8.3.1. Aircrews are expected to maintain route and course centerlines for all RNAV operations. (T-2).

3.8.4. When flying "or GPS" approaches the underlying navigational aids (NAVAID) must be operational and properly displayed on the "pilot monitoring" instruments. Day VMC is required for GPS overlay approaches if the underlying NAVAID cannot be displayed. (T-2).

3.8.5. Since the T-1A control display unit (CDU) does not display RNAV waypoint type (flyby or flyover), and to meet the requirements of AFMAN 11-217, Volume 1, aircrews must be vigilant to ensure that flight director guidance corresponds to each waypoint type as published in FLIP while flying published RNAV terminal and en route procedures. In rare instances of a database error, pilot intervention of flight director guidance may be required to ensure the procedure is flown as published. (T-2).

3.8.6. MAJCOM review and approval of the Jeppesen® database is required for IFR operations outside the NAS. (T-2).

3.8.7. **Receiver Autonomous Integrity Monitoring (RAIM).**

3.8.7.1. **Preflight Planning.** Aircrew must check predictive RAIM prior to *filing* published RNAV terminal or en route procedures. (T-2).

3.8.7.1.1. If RAIM is not available along the planned or actual route of flight for more than 5 continuous minutes, aircrews should alter routing or plan the flight utilizing traditional navigational sources. (T-2).

3.8.7.1.2. If the only suitable approach at an intended destination requires GPS, aircrews must check predictive RAIM prior to *filing* for that airfield. If predictive RAIM forecasts an outage, weather must allow for a VFR arrival, approach, and landing IAW AFI 11-202, Volume 3. (T-2).

3.8.7.2. **Aircraft Operations.** Aircrews will check predictive RAIM utilizing the aircraft FMS prior to: (T-2).

3.8.7.2.1. Takeoff for any RNAV departure procedure (DP).

3.8.7.2.2. Commencing any RNAV standard terminal arrival (STAR) or RNAV instrument approach procedure.

3.8.8. **RNAV (GPS) Instrument Approach.** "DME/DME" and "WAAS" notations on published "RNAV" instrument procedures are not applicable to the T-1A. If a published RNAV procedure requires either, and has no provision for GNSS or GPS, T-1A aircrew may not file or fly the procedure. Additionally, T-1A aircrews are not authorized to fly instrument approaches labeled "RNAV/RNP." Suitable procedures for the T-1A will state "GPS Required" or "GNSS." (T-2).

3.8.8.1. The T-1A is certified for circling, LNAV MDA, and LNAV/VNAV DA minima for RNAV approaches. The T-1A is not WAAS-equipped, therefore aircrew will not use: "GLS" or "LPV" minimums. (T-2).

3.8.8.2. Aircrews must closely monitor the electronic attitude director indicator (EADI) and CDU for FMS messages during RNAV approaches. The following CDU messages require termination of an RNAV approach and coordination with ATC for an alternate clearance or execution of a missed approach: "GPS-FMS DISAGREE," "GPS NOT AVAILABLE," "NO GPS RAIM," "NO APPR GPS RAIM" (see TO 1T-1A-1 for message descriptions). These messages are not all inclusive and aircrews will coordinate for an alternate clearance anytime FMS/GPS integrity is in doubt. (T-2).

3.8.8.3. The T-1A FMS utilizes an uncompensated barometric-vertical navigation (BARO-VNAV) aiding system. Cold temperature limitations apply to T-1A RNAV approach operations as specified in AFMAN 11-217, Volume 1. Additionally, aircrews may not descend to LNAV/VNAV minimums with remote altimeter settings. (See AFMAN 11-217, Volume 1, for additional guidance.) (T-2).

3.8.8.4. Since the T-1A CDU does not display RNAV instrument approach segment distances in tenths of a mile and to meet the requirements of AFMAN 11-217, Volume 1, aircrews must ensure that once established on the unverified segments of the approach, the electronic horizontal situation indicator (EHSI) distance is evaluated to ensure an appropriate published charted value. If the value is appropriate based on current aircraft position, crews may continue the approach. Deviations from expected values should be treated conservatively and crews will abort the approach if the evaluated distance does not correspond to within 0.1 nm of the FLIP published value. (T-2).

3.8.8.5. Depending upon RNAV approach procedure coding, in rare instances the T-1A FMS can strip "step down" waypoint fixes from the J3-America database which are located along the intermediate approach segment. Flying these approaches is acceptable provided that the only change at the stripped waypoint is an altitude and the aircrew can identify the point through an alternate means (e.g. nm distance to the FAF). Manual insertion of a waypoint into the approach is strictly prohibited. (T-2).

3.8.9. **RNAV 1 Terminal Procedures.** The T-1A is certified for FLIP *published* RNAV 1 [1 nm total system error (TSE)] DPs and RNAV 1 STARs. RNAV DPs and STARS are RNAV 1 unless depicted otherwise. Some RNAV 2 procedures exist within the NAS, and aircrews may fly these procedures using RNAV 1 guidance. RNAV DPs and STARs must be retrieved, in their entirety, by procedure name from the FMS database and aircrews must

ensure that the proper departure or arrival runway is selected. Manual entry of waypoints using latitude/longitude or place/bearing is prohibited. (T-2).

3.8.9.1. Since RNAV 1 procedures require lateral deviation of no more than 0.5 nm, aircrews must not exceed one dot on the course deviation indicator (CDI) of the EHSI (approximately 0.5 nm) while in the "Terminal Mode," with the display select panel (DSP) set to "FMS, FMS" and flight director set to "NAV." Additionally, aircrews should monitor cross track utilizing the MFD or CDU "Progress" page. (T-2).

3.8.9.1.1. Some RNAV 1 terminal procedures may begin or terminate outside of the FMS "Terminal Mode" 30 nm area. In these instances, one dot displacement on the CDI will not approximate the required RNAV 1 lateral accuracy. (T-2).

3.8.9.1.2. Any time a segment of an RNAV 1 terminal procedure is flown outside of the 30 nm "Terminal Mode" area, aircrews *must* monitor cross track utilizing the MFD or CDU to ensure the aircraft remains within the 0.5 nm lateral tolerance of the RNAV 1 routing. (T-2).

3.8.9.2. Aircrews must closely monitor the EADIs and CDU for FMS messages during RNAV 1 procedures. The following CDU messages indicate position errors exceeding RNAV 1 tolerances, and require termination of RNAV 1 procedures and coordination with ATC for an alternate clearance: "GPS-FMS DISAGREE," "GPS NOT AVAILABLE," "NO GPS RAIM." (See TO 1T-1A-1 for message descriptions.) These messages are not all inclusive and aircrews will coordinate for an alternate clearance anytime FMS/GPS integrity is in doubt. (T-2).

3.8.9.3. Course difference of up to 3 degrees is acceptable when comparing FMS loaded RNAV 1 departure or arrival procedures (RNAV STARS and SIDs) from the aircraft database to the FLIP published courses. (T-2).

3.8.9.4. During RNAV 1 DPs, aircrews *will* select "NAV" on the flight director as soon as practical after takeoff to ensure lateral RNAV guidance is available and followed. (T-2).

3.8.10. **RNAV 2 En Route Procedures.** The T-1A is certified for FLIP *published* RNAV 2 (2 nm TSE) en route operations in Required Navigation Performance airspace ("Q" or "T" designated routes found in FLIP). These procedures will be depicted and identified on FLIP as "RNAV 2." Whenever possible, RNAV 2 routes should be extracted from the FMS database, in their entirety, by inserting the starting and ending waypoints and utilizing the route name in the "VIA" line of the flight plan pages of the CDU. Selecting and inserting individual, named fixes from the database is permitted utilizing the "TO" lines, however *all fixes* along the published route to be flown *must* be inserted. Manual entry of waypoints using latitude/longitude or place/bearing is prohibited. (T-2).

3.8.10.1. Since CDI lateral deviation is automatically set by the FMS to 5 nm outside of the 30 NM terminal area (with FMS selected on the DSP), aircrews *must* monitor cross track utilizing the MFD or CDU to ensure the aircraft remains within the 1.0 nm lateral tolerance of the RNAV 2 routing. (T-2).

3.8.10.2. Aircrews must closely monitor the EADIs and CDU for FMS messages during RNAV 2 procedures. The following CDU FMS messages indicate position errors

exceeding RNAV 2 tolerances and require termination of RNAV 2 procedures and coordination with ATC for an alternate clearance: "GPS-FMS DISAGREE," "GPS NOT AVAILABLE," "NO GPS RAIM." (See TO 1T-1A-1.) These messages are not all inclusive and aircrews will coordinate for an alternate clearance anytime FMS and/or GPS integrity is in doubt. (T-2).

3.8.10.3. Course difference of up to 3 degrees is acceptable when comparing the FMS loaded RNAV 2 route from the aircraft database to the FLIP published courses. (T-2).

3.9. Low Level:

3.9.1. **Weather.** Comply with VFR cloud clearance requirements in AFI 11-202, Volume 3. For locally published routes, slow routes (SR), and instrument routes (IR), aircrew will ensure a minimum ceiling and visibility of 1,500 feet and 3 sm. For VFR training visual routes (VR) see AFMAN 11-217, Volume 2. (T-2).

3.9.2. **Ground Speed.** Planned ground speeds on military training routes are 210 and 240 knots (maximum planned ground speed is 270 knots). Aircrews should avoid actual ground speeds exceeding 300 knots. Maximum IAS on a slow speed training route (SR) is 250 KIAS. (T-2).

3.9.3. **Altitudes.** Plan altitudes which provide adequate terrain and obstacle clearance. The minimum allowable altitude on all low levels is 500 feet above the highest terrain or obstacle or greater if specified in FLIP, within 2,000 feet of the aircraft. (T-2).

3.9.4. **Obstacle Clearances.** Towers and other manufactured obstacles are more difficult to see than high terrain. Aircrew will fly a minimum of 500 feet above the highest unseen obstacle within 2 NM of the aircraft. Once the obstacle is visually acquired, aircrews will fly a minimum of 500 feet above, or laterally avoid the obstacle by a minimum of 2,000 feet. (T-2).

3.9.5. **Maneuvering.** During low-level operations, aircrews will not exceed 45 degrees of bank unless required for safety of flight. (T-2).

3.9.6. **Daylight Restrictions.** Enter the route no earlier than 30 minutes after sunrise (1 hour for mountainous terrain) and exit the route no later than 30 minutes prior to sunset (1 hour for mountainous terrain). See AFI 11-202 Volume 3, *General Flight Rules* and/or 14 CFR §95.11 for the definition of mountainous terrain. (T-2).

3.10. Airdrop:

3.10.1. **Altitude.** The simulated airdrop maneuver is performed at a minimum of 1,000 feet AGL or 500 feet above planned route altitude. When accomplished in a military operating area (MOA), flight lead will determine an appropriate altitude. Whenever a flight path conflict with lead exists, wingman should attempt to cross high in relation to lead. On the route, wingman will never fly below lead or 500 feet AGL, whichever is higher, unless safety dictates otherwise. ***EXCEPTION*:** Wingman may fly below lead's altitude during a climbing egress from a simulated airdrop or during route exit. (T-2).

3.10.2. **Configuration.** Airdrop configuration is 10 degrees flap setting and 140 KIAS minimum. (Airspeed may be higher as briefed by flight lead.) (T-2).

3.11. Formation Restrictions:

3.11.1. **Takeoff, Approach, and Landing:**

3.11.1.1. Visual formation departures are not authorized when IMC will be encountered. Separate departures (a separation of 1 minute or as determined locally) will be made with a join-up on top. (T-2).

3.11.1.2. When IMC will be encountered, formation instrument approaches are not authorized. (T-2).

3.11.1.3. Drag approaches are authorized to expedite formation recoveries, but they must comply with the separation criteria. (T-2).

3.11.2. **Maneuvering:**

3.11.2.1. Practice lost wingman will be performed in day VMC above 1,000 feet AGL. (T-2).

3.11.2.2. Formation is prohibited in IMC. Formations on an IFR clearance will maintain clear of clouds. Formations under a VFR clearance will maintain VFR cloud clearances IAW AFI 11-202, Volume 3. (T-2).

3.11.2.3. The maximum number of aircraft in formation is two. (T-2).

3.11.2.4. The maximum airspeed for number two is 250 KIAS below 10,000 feet mean sea level. (T-2).

3.11.2.5. The minimum altitude for formation position changes is 1,000 feet AGL. (T-2).

3.11.2.6. Offset Maneuvering - Cloud clearances must be at least 1,000 feet vertically and 1 nm horizontally with 3 nm in-flight visibility. (T-2).

3.11.2.7. Only T-1A formation-current IPs may fly safety chase for aircraft under emergency conditions (or impending emergency conditions). (T-2).

3.12. Simulated Air Refueling:

3.12.1. **Turbulence Restriction.** Do not fly precontac or contact positions in conditions exceeding light turbulence. Turbulence is limited to no greater than moderate up to the astern position. (T-2).

3.12.2. **Separation.** Receiver aircraft will maintain 1,000 feet below air refueling base altitude until visual contact is established with the tanker. Rendezvous closure will not be continued when the in-flight visibility is such that the receiver does not have visual contact with the tanker at 1 nm. (T-2).

3.12.3. **Weather.** Weather criteria for flying precontact and contact positions are an in-flight visibility of 1 mile and clear of clouds. (T-2).

3.12.4. **Altitude Restriction.** Do not conduct closures to precontact or contact from the 1 mile visual position above FL 310. (T-2).

3.13. Air Intercept:

3.13.1. **Maximum Participating Aircraft.** Maximum participating aircraft during air intercept is two. (T-2).

3.13.2. **Separation.** A ircraft will coordinate to accept MARSA (Military Assumes Responsibility for Separation of Aircraft) and will maintain a minimum of 1,000 vertical feet of separation during role reversals. (T-2).

3.13.2.1. During role reversals, participating aircraft will ensure a minimum of 1 nm separation utilizing the air-to-air (A/A) function of the aircraft TACAN (Tactical Air Navigation) and diverging courses before swapping intercept altitudes. The mission commander may direct the altitude swap with the aircraft commander's concurrence. (T-2).

3.13.2.2. Both aircraft will report established on altitude with the proper altimeter setting before commencing subsequent intercepts. (T-2).

3.13.2.3. Both aircraft will squawk an ATC assigned or VFR transponder code (as applicable) during air intercept operations. (T-2).

3.13.3. **Maneuvering.** Aircraft will not exceed 45 degrees of bank and 2 Gs; and maneuvering will occur in the horizontal plane only. Maximum use of the autopilot is recommended.

3.13.3.1. Maximum planned intercept airspeed for participating aircraft is 0.6 indicated MACH number (IMN). (T-2).

3.13.3.2. Target aircraft are limited to 30 degrees of bank and should not exceed 60 degrees of heading change either side of planned intercept course. (T-2).

3.13.3.3. Target aircraft will cease maneuvering (roll wings level) no later than passing the attacking aircraft's 3/9 line (determined visually or on aircraft systems) unless required to maintain airspace boundaries, avoid weather and/or hazards or directed by ATC. (T-2).

3.13.3.4. Both A/A TACANs and automatic dependent surveillance broadcast (ADS-B) (GDL-90) functions are required to be operable on both aircraft during air intercept. ***EXCEPTION:*** This does not apply to air intercept training utilizing simulated targets. (T-2).

3.13.4. **Altitude Restriction.** Air intercept will not be conducted below 5,000 AGL. (T-2).

3.13.5. **Airspace.** Air intercept will only be accomplished in special use airspace. (T-2).

3.13.6. **Weather.** Day-VMC only with a minimum of 1,000 feet vertical (above and below) and 1 NM horizontal cloud clearance and 5 nm in-flight visibility. (T-2).

3.13.7. **Terminate.** Intercepts will terminate via an interplane radio call no later than the point at which the attacking aircraft acquires a zero aspect on the target aircraft; or to initiate role reversal; or for break-up recovery. (T-2).

3.13.8. **Mission Commander.** A certified air intercept instructor pilot or instructor CSO will be designated as mission commander between the two participating aircraft during mission planning and is responsible for ensuring proper coordination, de-confliction and execution of the mission. (T-2).

3.13.9. **Aircraft Maneuvering Calls.** During air intercept training, CSOs will direct the pilot to maneuver the aircraft utilizing the following standardized interphone terminology: (T-2).

3.13.9.1. "Easy (right or left)." Command to roll to, and maintain 15 degrees of bank, right or left, as directed.

3.13.9.2. "Turn (right or left)." Command to roll to, and maintain 30 degrees of bank, right or left, as directed.

3.13.9.3. "Hard (right or left)." Command to roll to, and maintain 45 degrees of bank, right or left, as directed.

3.13.9.4. "Roll out." Command to roll wings level from any established turn.

3.13.9.5. "Tighten down." Command to increase bank angle from 15 to 30 degrees or 30 to 45 degrees.

3.13.9.6. "Ease turn." Command to decrease bank angle from 45 to 30 degrees or 30 to 15 degrees.

3.13.9.7. "Hold." Command to maintain angle of bank during transitions into or out of a turn.

3.14. Advisory Calls: (See TO 1-1T-1A and applicable supplements for additional information.)

3.14.1. **Mandatory Calls for Pilot Monitoring (PM). (**PM refers to a student, pilot, or CSO occupying a position with direct access to a set of flight controls.) The PM will make the following calls: (T-2).

3.14.1.1. **Nonprecision Approaches:**

3.14.1.1.1. "One hundred feet above" MDA (published, PWC or CSO, as applicable).

3.14.1.1.2. "Minimums" at MDA (published, PWC or CSO, as applicable).

3.14.1.1.3. "Runway in sight." Call when the runway environment is, and will remain in sight. Avoid making the call too soon when obstructions to vision, such as fog, haze, low clouds, etc., are present.

3.14.1.1.4. "Go around." Call at the MAP if the runway environment is not in sight.

3.14.1.2. **Precision Approaches:**

3.14.1.2.1. " One hundred feet above DH/DA" (published, PWC or CSO, as applicable).

3.14.1.2.2. "Continue." Call at DH/DA if the runway environment is in sight but the runway red termination bars or the red side row bars are not visible or identifiable. When using the "continue" call at DH/DA, the "land" or "go around" calls described below may be delayed until 100 feet AGL above THRE/TDZE to line up with procedures described in AFMAN 11-217, Volume 1. In order to call "land" at 100 feet, the red termination bars or the red side row bars must be visible and identifiable.

3.14.1.2.3. "Land." Call at DH/DA, if the runway is in sight and the aircraft is in a safe position for a normal landing.

3.14.1.2.4. "Go around." Call at DH/DA if the runway environment is not in sight or the aircraft is not in a safe position for a normal landing.

3.14.1.2.5. When flying an RNAV approach to LNAV/VNAV minimums, use the precision approach calls. For all other GPS approaches use nonprecision calls in paragraph 3.14.1.1.

3.14.1.3. **Climbout:**

3.14.1.3.1. Transition altitude.

3.14.1.3.2. At 1,000 feet below assigned altitude.

3.14.1.4. **Descent:**

3.14.1.4.1. Transition level.

3.14.1.4.2. At 1,000 feet above assigned altitude.

3.14.1.4.3. At 1,000 feet above initial approach fix altitude or holding altitude.

3.14.1.4.4. At 100 feet above procedure turn, final approach fix altitude, and any step down altitude inside the final approach fix.

3.14.1.5. **Deviations.** The PM will announce heading deviations, airspeed deviations of 5 knots or more below desired, and altitude deviations of 100 feet or more from desired. (T-2).

3.14.2. **Calls for Any Crewmember.** Any crewmember will announce an altitude variation of 200 feet or more, an airspeed deviation of 10 knots from desired, any potential terrain or obstruction clearance problems, and airborne hazards (e.g., birds or traffic conflicts). (T-2).

3.15. Simulated Emergencies:

3.15.1. **Procedures and Restrictions:**

3.15.1.1. Do not practice simulated emergency takeoff, approach, or landing procedures unless an IP is seated at, and has immediate access to aircraft controls and weather is a minimum of 1,500 feet and 3 sm. (T-2).

3.15.1.2. Brief all airborne simulated emergencies prior to execution. Compound or multiple simulated emergencies are prohibited. (T-2).

3.15.1.3. Maintain clear of clouds when conducting simulated emergencies. (T-2).

3.15.1.4. Do not practice a single-engine go-around after selecting 30 degree flaps. (T-2).

3.15.1.5. Do not initiate practice simulated engine failure below 500 feet AGL during takeoff or landing. (T-2).

3.15.1.6. Do not fly VFR single-engine and no-flap patterns from the tactical pattern. (T-2).

3.15.1.7. Discontinue simulated emergencies if intracockpit communications cannot be maintained. (T-2).

3.15.1.8. CSOs may only perform PM duties during simulated emergency procedures. (T-2).

3.16. Uncontrolled Airfields: (See AFI 11-202, Volume 3.) **Note:** VFR pattern maneuvers may only be flown at airfields with an approved MAJCOM letter of agreement (LOA). (T-2).

3.16.1. Each operations group commander will develop a training program to prepare aircrews to operate in the uncontrolled airfield environment. Prior to implementation, AETC/A3V must approve the training program. As a minimum, the program should include a discussion of all applicable codes of FAA regulations, advisory circulars, and Aeronautical Information Manual (AIM), *Official Guide to Basic Flight Information and ATC Procedures,* references on uncontrolled and non-towered airport operations. Training will emphasize standard common traffic advisory frequency (CTAF) radio phraseology and instrument approach procedures in a non-radar environment. (T-2).

3.16.2. Each operations group commander will develop procedures for each uncontrolled airfield utilized. (T-3). These procedures should include (at a minimum): normal pattern operations, pattern breakout procedures and emergency procedures. Other information may be included at the OG/CCs discretion. (T-2).

3.16.3. With a certified IP in either pilot seat, T-1A aircrews may conduct VFR pattern operations at uncontrolled public-use airfields, with the following restrictions: (T-2).

3.16.3.1. They will be flown in the day only.

3.16.3.2. They will be flown single ship only.

3.16.3.3. Weather at the field must be equal to or greater than 3,000 feet and 3 sm.

3.16.3.4. Winds must be within limits for each runway to which the aircrew operates.

3.16.3.5. All patterns and approaches will be flown to a low approach unless landings are specifically permitted in the LOA. In the event an unplanned landing is required, the OG/CC will ensure fire or crash recovery and maintenance line personnel, as appropriate, are available for the subsequent launch. (T-3). Aircrews will make CTAF radio calls prior to taxiing and taking the runway for takeoff.

3.16.3.6. A ircrews will monitor the published CTAF frequency and will, at a minimum, make radio calls and position reports at approximately 10 miles from the airfield to report intentions; entering downwind; entering final; and departing the airfield.

3.16.3.7. No more than two aircraft *total* (military or civilian) may be in the pattern. If additional aircraft enter the pattern for the purpose of performing multiple approaches, T-1A aircrews will depart the airfield as soon as practical. If additional aircraft enter the pattern for full stop landings only, aircrews do not need to depart the airfield, but may breakout of the pattern and re-enter once the aircraft has landed. If two or more aircraft are already in the traffic pattern, aircrew will not attempt to enter the pattern.

3.16.3.8. Standard rectangular patterns will be flown left hand traffic, unless the airfield traffic pattern indicators or FLIP depict otherwise. No tactical patterns will be flown.

3.16.3.9. Except for climbout after takeoff, the maximum airspeed for operations at an uncontrolled airfield is 200 KIAS.

3.16.3.10. Instrument approaches will be flown under an IFR clearance, unless waived IAW AFI 11-202, Volume 3. If cleared to switch to CTAF or IFR cancellation occurs,

radio calls will be made to report the final approach fix or inbound segment of the approach; and upon termination or completion of the approach.

3.16.3.10.1. Instrument approaches may be flown at non-LOA uncontrolled airfields for the purposes of descending below the weather to cancel IFR and proceed VFR (e.g., to facilitate entering a military training route).

3.16.3.11. Aircrews will immediately notify the supervisor of flying if any hazardous conditions exist at an uncontrolled airfield that would prevent normal operations.

3.16.3.12. Aircrews should refer to FAA AIM, *Traffic Advisory Practices at Airports Without Operating Control Towers,* for more information regarding uncontrolled airfield operations.

Chapter 4

OPERATING RESTRICTIONS

4.1. Minimum Equipment List (MEL) Policy:

4.1.1. Missions originating from the home station should not normally launch with a known malfunction. Official aircraft status is determined IAW AFI 21-103, *Equipment Inventory, Status and Utilization Reporting*. However, aircraft commanders may utilize the MEL (Table 4.1) to determine the acceptability of an aircraft for a mission without further approval. (T-2).

4.1.2. It would be impractical to prepare a list that would anticipate all possible combinations of equipment malfunctions and contingent circumstances. The MEL identifies the minimum equipment and systems required to launch the aircraft under normal conditions. The MEL represents MAJCOM restrictions only and does not include all equipment or systems essential to airworthiness, e.g., rudder, elevator, flaps, ailerons, tires, etc. Consider equipment and/or systems with no listed exceptions as grounding items. (T-2).

4.1.3. The aircraft commander is responsible for exercising the necessary judgment to ensure the aircraft is not accepted with inoperative equipment or systems that may result in an unsafe degradation and/or an undue increase in crew workload. The aircraft commander shall account for the possibility of additional failures during continued operation with inoperative systems or components. The MEL is not intended for continued operation over an indefinite period with systems and/or subsystems inoperative. (T-2).

4.1.4. Once airborne, aircraft commanders must weigh all pertinent factors when deciding whether to continue or abort a sortie for an aircraft malfunction. Factors include weather conditions at home base and divert base, student's mission requirements, etc. (T-2).

4.1.5. Operations group commanders may waive restrictions listed in the MEL or unlisted items and/or equipment on a flight-by-flight basis if there is no compromise of flight safety or Air Force directives. This authority may not be delegated below the deputy group commander. (T-3).

Table 4.1. T-1A Minimum Equipment List (Excluding functional check flight [FCF]).

ITEM	A	B	C	D
	Equipment/System	**Installed**	**Required**	**Remarks/Limitations/Exceptions**
1	Air-conditioning unit/ pressurization system	1	1	
2	Navigation lights	7	7	All lights on each wing (2 green and 1 white; or 2 red and 1 white) and tail light must be operational. If one or more are inoperative, OG/CC may approve one-time day-only flight to home station.

ITEM	A Equipment/System	B Installed	C Required	D Remarks/Limitations/Exceptions
3	Anticollision beacon	1	1	
4	Anticollision strobes	3	3	
5	Landing lights	2	1	Both lights must be operational for night missions.
6	Antiskid system	1	1	
7	Oxygen system	1	1	Additionally, masks must be operational with a current inspection in all active crew positions for the mission being flown.
8	Flight data recorder	1	1	Failure noted with either an "SDRR Fail" or "FDMU Fail" message. Aircrews may take off with "SDRR Mem Full."
9	Stall warning system	2	2	The stall warning system includes "stick shaker," aural warning, glare shield lights and annunciator lights.
10	VHF radio	1	1	
11	UHF radio	1	1	
12	Very high frequency omnidirectional range station and ILS	2	2	Not required for day/VMC local sortie.
13	DME	3	3	
14	TACAN	1	1	Air-to-air functionality must be operable for air intercept operations.
15	Automatic direction finder (ADF)	1	0	
16	GPS	1	0	GPS is required for air refueling, GPS defined MOAs, and any other planned/filed RNAV procedure. Notify ATC of not being a /G designation.
17	AOA system	1	1	

ITEM	A Equipment/System	B Installed	C Required	D Remarks/Limitations/Exceptions
18	Electronic flight instrument system	1	1	Includes two display units, four electronic flight displays, two display select panels, and a multifunctional display.
19	Flight management system (FMS)	1	1	
20	Intercom system	1	1	
21	Rudder boost	1	1	
22	Static wicks	12	12	If one or more are missing, OG/CC may approve one-time flight to home station.
23	AOA, pitot, and static heat system	1	1	If system operation can be physically verified and the master caution annunciator bulbs are operative, aircrew may continue with inoperative indicator lights on the overhead panel.
24	Anti-ice system	1	0	Includes wing anti-ice, engine anti-ice, horizontal stab anti-ice, and horizontal stab de-ice. Required for flight in IMC above the freezing level or known icing conditions.
25	Windshield heat	2	0	Required for flight above FL 180 or known icing conditions or IMC.
26	Weather radar	1	0	Required for flight if convective activity is known or forecast along planned route of flight for ETE + 2 hours.
27	Wing inspection lights	2	0	Both lights required at night.
28	Radio altimeter	1	0	Required for low-level navigation, night, or IMC pattern operations with ceilings below 1,000 feet.
29	Autopilot	1	0	Required if the pilot or copilot will exceed 6.5 hours of total flying time in one duty day. Required for any CSO mission unless left and

ITEM	A Equipment/System	B Installed	C Required	D Remarks/Limitations/Exceptions
				right seat crew complement consists of two qualified pilots.
30	Yaw damper	1	0	Required for cross-country and out-and-back missions or flight above FL280.
31	Engine fire detection system	2	2	
32	Windshield wipers	2	0	Required if precipitation is forecast or reported ±1 hour of estimated time of departure or estimated time of arrival.
33	Clock	2	0	One clock minimum required for CSO, low-level, airdrop, or air refueling missions. A personal clock and/or stopwatch may be substituted at the aircraft commander's discretion.
34	Electronic oil dipstick	2	0	If inoperative, oil must be checked manually.
35	TCAS	1	1	May be inoperative for day VMC only mission, unless the mission includes low-level navigation, air intercept or formation (includes airdrop and air refueling).
36	GPWS	1	1	May be inoperative for day VMC-only mission, unless the mission includes low-level navigation.

4.2. FCF Restrictions. FCFs will not be conducted with other type missions except FCF CT, FCF upgrade training, or FCF certification flights. All FCF requirements will be accomplished by an FCF pilot or a pilot in training status with an FCF IP on board. The pilot in training status may occupy either seat during a T-1 FCF. The operations group commander may authorize non-FCF-qualified pilots to fly during an FCF mission. (T-3).

4.2.1. FCFs may recover at home station when originating from AETC auxiliary fields or from bases within the local flying area. (T-3).

4.2.2. Instrument approaches or other AETC syllabus maneuvers not IAW TO 1T-1A-6CF-1, *Checkflight – Acceptance and Functional Procedures, T-1A,* will not be practiced on FCF missions unless required to check the aircraft. (T-3).

4.2.3. Touch-and-go landings are not authorized on an FCF sortie unless required to complete the FCF IAW TO 1T-1A-6CF-1. (T-3).

4.2.4. Local FCF pilots or crews are authorized to perform required FCFs on transient AETC aircraft if approved by the owning commander. (T-3).

TOD D. WOLTERS, Lt Gen, USAF
DCS Operations

Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References

AFPD 11-2, *Aircrew Operations,* 19 January 2012

AFI 11-202, Volume 3, *General Flight Rules,* 22 October 2010

AFI 11-214, *Air Operations Rules and Procedures,* 14 August 2012

AFI 11-215, *USAF Flight Manuals Program (FMP),* 22 December 2008, Incorporating Change 1, 28 October, Certified Current, 3 January 2011

AFI 11-218, *Aircraft Operations and Movement on the Ground,* 28 October 2011

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AFI 21-103, *Equipment Inventory, Status and Utilization Reporting,* 26 January 2012

AFMAN 11-217, Volume 1, *Instrument Flight Procedures,* 22 October 2010

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AFMAN 11-247, *T-1A Flying Fundamentals,* 10 April 2013

AFI 11-401, *Aviation Management,* 10 December 2010

AFI 11-2T-1, Volume 1, *T-1A Aircrew Training,* 15 October 2012

AFMAN 33-363, *Management of Records,* 1 March 2008

Federal Aviation Administration, Aeronautical Information Manual, *Official Guide to Basic Flight Information and ATC Procedures,* 3 April 2014

TO 1T-1A-1, *Flight Manual – T-1A Series Aircraft,* 30 June 2013

TO 1T-1A-1-2, *Flight Manual – USAF T-1A Supplemental Flight Manual, USAF Series T-1A Aircraft,* 31 August 2010

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TO 1T-1A-1CL-1, *Checklist – Flight Crew, T-1A Aircraft,* 30 June 2013

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TO 1T-1A-6CF-1, *Check Flight – Acceptance and Functional Procedures, T-1A,* 31 August 2010

TO 42C-1-2, *Anti-Icing, De-Icing and Defrosting of Parked Aircraft,* 19 May 2014

Adopted Forms

AF Form 847, *Recommendation for Change of Publication,* 22 September 2009

Abbreviations and Acronyms

A/A—air-to-air

ACM—air cycle machine

ADS-B—automatic dependent surveillance broadcast

AETC—Air Education and Training Command

AGL—above ground level

AHAS—Avian Hazard Advisory System

AIM—Aeronautical Information Manual

AOA—angle of attack

AP—aircrew planning

AR—aerial refueling

A/P—autopilot

ARMS—Aviation Resource Management System

ASR—approach surveillance radar

ASRR—Airfield Suitability and Restrictions Report

ATC—air traffic control

BAM—bird avoidance model

BIT—break-in-training

CDI—course deviation indicator

CDU—control display unit

CFL—critical field length

CRM—crew resource management

CSO—combat systems officer

CT—continuation training

CTAF—common traffic advisory frequency

DA—decision altitude

DH—decision height

DME—distance measuring equipment

DNIF—duties not involving flying

DO—director of operations

DP—departure procedure

DSP—display select panel

EADI—electronic attitude director indicator

EHSI—electronic horizontal situation indicator

ERAA—emergency route abort altitude

ETA—estimated time of arrival

ETE—estimated time en route

FAA—Federal Aviation Administration

FCF—functional check flight

FCIF—flight crew information file

FDMU—flight data memory unit

FLIP—flight information publication

FMS—flight management system

FOD—foreign object damage

GLS—global navigation satellite system landing system

GNSS—global navigation satellite system

GPS—global positioning system

GPWS—ground proximity warning system

IAP—instrument approach procedure

ICSO—instructor combat systems officer

IFF—identification, friend or foe

IFG—in-flight guide

IFR—instrument flight rules

ILS—instrument landing system

IMC—instrument meteorological conditions

IMN—indicated MACH number

IP—instructor pilot

IR—instrument route

KIAS—knots indicated air speed

KIO—knock-it-off

LNAV—lateral navigation

LOA—letter of agreement

MAJCOM—major command

MAP—missed approach point

MARSA—military assumes responsibility for separation of aircraft

MAWP—missed approach waypoint

MCT—maximum continuous thrust

MDA—minimum descent altitude

MEL—minimum equipment list

MFD—multi-function display

MIF—maneuver item file

MOA—military operating area

NA—not applicable

NAS—National Airspace System

NAVAID—navigational aid

NFO—naval flight officer

NM—nautical mile

NOTAM—notice to airmen

OCF—operational check (flight)

OG—operations group

OPR—office of primary responsibility

ORM—operational risk management

PA—pressure altitude

PAR—precision approach radar

PF—pilot flying

PIC—pilot in command

PM—pilot monitoring

PNF—pilot-not-flying

PWC—pilot weather category

RAIM—receiver autonomous integrity monitoring

RCR—runway condition reading

RNAV—area navigation

RNP—required navigation performance

RVR—runway visual range

SDRR—signal data recorder reproducer

SII—special interest item

sm—statute mile

SOF—supervisor of flying

SR—slow route

STAN/EVAL—standardization/evaluation

STAR—standard terminal arrival

SUPT—specialized undergraduate pilot training

TACAN—tactical air navigation

TCAS—Traffic Alert and Collision Avoidance System

TDZE—touchdown zone elevation

THRE—runway threshold elevation

TO—technical order

TOLD—takeoff and landing data

TSE—total system error

UCT—undergraduate combat systems officer training

UHF—ultra high frequency

VCOA—visual climb over airport

VFR—visual flight rules

VHF—very high frequency

VMC—visual meteorological conditions

VNAV—vertical navigation

VR—visual route

WASS—wide area augmentation system

Attachment 2

SINGLE-SHIP BRIEFING GUIDE

A2.1. Premission:

A2.1.1. Review grade book, syllabus, maneuver item file (MIF), and Commander Awareness Program.

A2.1.2. Prerequisites met or opted.

A2.1.3. Grounded (duties not involving flying [DNIF], Unsat).

A2.1.4. Crew duty day, crew rest, and nutrition.

A2.1.5. Mission planning checklist.

A2.1.6. Night procedures guide.

A2.1.7. Orientation and passenger briefing guide.

A2.1.8. Flyover and static guide.

A2.1.9. Crew resource management (CRM) guide:

A2.1.9.1. I n-flight checks and discipline.

A2.1.9.2. Clearing (high threat areas and collision avoidance) (visually, radios, Traffic Alert and Collision Avoidance System [TCAS]).

A2.1.9.3. Radio procedures and discipline.

A2.1.9.4. Transfer of aircraft control (with or without intercom).

A2.1.9.5. Low weather (below 500-foot ceiling or 1.5 miles visibility) takeoff and landing considerations.

A2.1.9.6. Seat exchange procedures.

A2.1.9.7. Simulated emergency procedures.

A2.1.9.8. Jump seat duties.

A2.1.9.9. T-1A training rules: time-out.

A2.1.10. ORM guide.

A2.2. Overview:

A2.2.1. Call sign.

A2.2.2. Aircraft commander.

A2.2.3. Mission profile and requirements.

A2.2.4. Mission objectives.

A2.2.5. Communication guide reviewed.

A2.2.6. Time hack, step time, start time, takeoff time, and chock time.

A2.2.7. Review timeline, joker time and/or fuel, bingo fuel and/or time.

A2.2.8. Weather, flight plan, airfield suitability and restrictions report (ASRR), notice to airmen (NOTAM), and takeoff and landing data (TOLD).

A2.2.9. Alternate mission and profile.

A2.2.10. Flight crew information file (FCIF), ops notes, read file, bold face, and ops limits.

A2.2.11. Current special interest items (SII).

A2.3. Ground Operations:

A2.3.1. Crew duties (left and right seat).

A2.3.2. Start, taxi, and taxi-back procedures.

A2.3.3. Delays and spares.

A2.3.4. Ground abort.

A2.4. Takeoff and Departure:

A2.4.1. Active runway, airfield restrictions, cables, barriers, declared distance, and trouble T.

A2.4.2. Type takeoff and departure.

A2.4.3. Avionics setup (pilot flying [PF] and pilot not flying [PNF]).

A2.5. In-flight:

A2.5.1. Route of flight.

A2.5.2. Specific area work and parameters.

A2.5.3. Transition base:

A2.5.3.1. Approach review.

A2.5.3.2. Patterns and landings.

A2.5.3.3. Active runway, airfield restrictions, cables, barriers, declared distance, and trouble T.

A2.5.4. Touch-and-go procedures.

A2.5.5. Wake turbulence.

A2.5.6. Recovery:

A2.5.6.1. Return routing and approach review.

A2.5.7. VFR leg procedures:

A2.5.7.1. Turn points and route of flight.

A2.5.7.2. Headings, altitudes, and times.

A2.5.7.3. Flight following.

A2.5.7.4. VFR arrival.

A2.5.8. Instrument meteorological conditions (IMC) procedures:

A2.5.8.1. Anti-ice usage.

A2.5.8.2. Unusual attitudes.

A2.5.8.3. Spatial disorientation.

A2.6. Emergencies:

A2.6.1. Emergency ground egress.

A2.6.2. Abort procedures.

A2.6.3. Takeoff emergencies and emergency return.

A2.6.4. General aircraft malfunctions.

A2.6.5. Physiological and rapid decompression.

A2.6.6. Bird strike.

A2.6.7. Intercom and radio failure.

A2.6.8. Emergency and alternate airfields.

A2.7. Low-level:

A2.7.1. Coordination:

A2.7.1.1. Route scheduled (entry window).

A2.7.1.2. AP/1B restrictions, Avian Hazard Advisory System (AHAS) and Bird Avoidance Model (BAM).

A2.7.1.3. Chart and vertical obstruction currency.

A2.7.1.4. Entry (point and time).

A2.7.1.5. Exit (point and time).

A2.7.2. Route entry:

A2.7.2.1. Prominent features.

A2.7.2.2. Radial and distance measuring equipment (DME).

A2.7.2.3. Maneuvering to enter.

A2.7.2.4. Communications; identification, friend or foe (IFF); and ground proximity warning system (GPWS).

A2.7.3. Route study:

A2.7.3.1. Corridor width, block altitudes, ground track, and turn points.

A2.7.3.2. Planned groundspeed and altitudes.

A2.7.3.3. Mandatory reporting points and frequencies.

A2.7.3.4. Continuation and bingo fuels.

A2.7.3.5. Route conflicts:

A2.7.3.5.1. Parallel and crossing routes.

A2.7.3.5.2. Airfields, airspace, obstructions, and terrain.

A2.7.3.5.3. Populated areas.

A2.7.3.5.4. Noise-sensitive areas.

A2.7.3.5.5. Restricted areas.

A2.7.4. Recovery:

A2.7.4.1. Altitude, heading, fix, frequency, and IFF.

A2.7.5. Low-level emergencies:

A2.7.5.1. Emergency route abort altitude (ERAA) and lost procedures.

A2.7.5.2. IMC and visual meteorological conditions (VMC) abort procedures and divert.

A2.7.5.3. Bird avoidance and bird strike.

A2.7.5.4. Engine failure.

A2.7.5.5. Aircraft malfunctions.

A2.8. Additional Items:

A2.8.1. Publications, equipment, and special clothing requirements.

A2.8.2. Weight and balance.

A2.8.3. Food and water.

A2.8.4. Jewelry and scarves removed.

A2.8.5. Mobile phones off.

A2.9. Questions.

Attachment 3

MISSION/FORMATION BRIEFING GUIDE

A3.1. Premission:

A3.1.1. Review grade book, syllabus, MIF, and Commander Awareness Program.

A3.1.2. Prerequisites met and opted.

A3.1.3. Grounded (DNIF, Unsat).

A3.1.4. Crew duty day, crew rest, and nutrition.

A3.1.5. Mission planning checklist.

A3.1.6. Night procedures guide.

A3.1.7. Orientation and passenger briefing guide.

A3.1.8. Flyover and static guide.

A3.1.9. CRM guide:

A3.1.9.1. In-flight checks and discipline.

A3.1.9.2. Clearing (high threat areas and collision avoidance) (visually, radios, and TCAS).

A3.1.9.3. Radio procedures and discipline.

A3.1.9.4. Transfer of aircraft control (with or without intercom).

A3.1.9.5. Low weather (below 500-foot ceiling or 1.5 miles visibility) takeoff and landing considerations.

A3.1.9.6. Seat exchange procedures.

A3.1.9.7. Simulated emergency procedures.

A3.1.9.8. Jump seat duties.

A3.1.9.9. T-1A training rules: knock-it-off, terminate.

A3.1.10. ORM guide.

A3.2. Overview:

A3.2.1. Call signs.

A3.2.2. Mission/formation commander and aircraft commanders.

A3.2.3. Mission profile and requirements.

A3.2.4. Mission objectives.

A3.2.5. Communication guide reviewed.

A3.2.6. Time hack, step time, check-in, engine start, taxi time, takeoff times, and chock time.

A3.2.7. Review timeline, joker time/fuel, bingo fuel/time.

A3.2.8. Weather, flight plan, ASRR, NOTAMs, and TOLD.

A3.2.9. Alternate missions and profile.

A3.2.10. FCIF, ops notes, read file, bold face, and ops limits.

A3.2.11. Current SIIs.

A3.3. Ground Operations:

A3.3.1. Crew duties (left and right seat).

A3.3.2. Radio procedures and interplane.

A3.3.3. Air-to-air (A/A) TACAN/ADS-B.

A3.3.4. Start, taxi, and taxi back procedures.

A3.3.5. Delays and spares.

A3.3.6. Ground abort.

A3.4. Takeoff and Departure:

A3.4.1. Active runway, airfield restrictions, cables, barriers, declared distance, and trouble T.

A3.4.2. Runway lineup and winds.

A3.4.3. Type takeoff and departure (15 second, 1 minute, cell, single-ship).

A3.4.4. Join-up (altitude and location).

A3.4.5. Takeoff no later than time.

A3.4.6. Avionics setup (PF and PNF).

A3.4.7. Cell formation departure (climb airspeed, VSI, and altitude reporting procedures).

A3.5. In-flight:

A3.5.1. Route of flight.

A3.5.2. Breakouts.

A3.5.3. Lost sight and rendezvous.

A3.5.4. Lost wingman.

A3.5.5. Wake turbulence.

A3.5.6. Maneuver procedures and parameters:

A3.5.6.1. Rejoins (type and airspeed).

A3.5.6.2. En route airspeed.

A3.5.6.3. MOA profile:

A3.5.6.3.1. Rejoins.

A3.5.6.3.2. Practice lost wingman.

A3.5.6.3.3. Offset maneuvering.

A3.5.6.3.4. Cell.

A3.5.6.3.5. Precontact and contact.

A3.5.6.3.6. Simulated airdrop.

A3.5.7. Position change (fuel, time, and IFF).

A3.6. Air Refueling:

A3.6.1. Radio procedures and A/A TACAN.

A3.6.2. Military assumes responsibility for separation of aircraft (MARSA).

A3.6.3. Scheduled aerial refueling (AR) track, time, block altitudes, and controlling agency.

A3.6.4. Air refueling initiation point (ARIP), air refueling control point (ARCP), and air refueling control time (ARCT).

A3.6.5. AR rendezvous procedures:

A3.6.5.1. AR altitude.

A3.6.5.2. Overrun.

A3.6.5.3. IFF procedures.

A3.6.5.4. Practice emergency separation and breakaway.

A3.6.5.5. Breakup and recovery.

A3.7. Airdrop and Low-level:

A3.7.1. Coordination:

A3.7.1.1. Route scheduled (entry window).

A3.7.1.2. AP/1B restrictions, AHAS, and BAM.

A3.7.1.3. Chart and vertical obstruction currency.

A3.7.1.4. Compare low-level charts.

A3.7.1.5. Entry (point and time).

A3.7.1.6. Exit (point and time).

A3.7.2. Route entry:

A3.7.2.1. Prominent features.

A3.7.2.2. Radial and DME.

A3.7.2.3. Maneuvering to enter.

A3.7.2.4. Orbit procedures.

A3.7.2.5. Communications, IFF, and GPWS.

A3.7.3. Route study:

A3.7.3.1. Corridor width, block altitudes, ground track, and turn points.

A3.7.3.2. Planned groundspeed and altitudes.

A3.7.3.3. Mandatory reporting points and frequencies.

A3.7.3.4. Continuation and bingo fuels.

A3.7.3.5. Route conflicts:

A3.7.3.5.1. Parallel and crossing routes.

A3.7.3.5.2. Airfields, airspace, obstructions, and terrain.

A3.7.3.5.3. Populated areas.

A3.7.3.5.4. Noise-sensitive areas.

A3.7.3.5.5. Restricted areas.

A3.7.4. Low-level emergencies:

A3.7.4.1. ERAA and lost procedures.

A3.7.4.2. IMC and VMC abort procedures and divert.

A3.7.4.3. Bird avoidance and bird strike.

A3.7.4.4. Engine failure.

A3.7.4.5. Aircraft malfunctions.

A3.7.5. IP, slowdown, and timing.

A3.7.6. Airspeed, formation position, drop altitudes, and configuration.

A3.7.7. Time over target.

A3.7.8. Drop zone features and run-in heading.

A3.7.9. Acceleration and escape.

A3.7.10. Position change.

A3.7.11. Exit procedures:

A3.7.11.1. Altitude and routing.

A3.7.11.2. Heading.

A3.7.11.3. Fix.

A3.7.11.4. Frequency.

A3.7.11.5. I FF.

A3.8. Air Intercept:

A3.8.1. Communications/radio procedures.

A3.8.2. A/A TACAN, ADS-B, ATC transponder procedures.

A3.8.3. MARSA.

A3.8.4. Scheduled airspace, time, block altitudes, and controlling agency.

A3.8.5. Altitude/airspace deconfliction.

A3.8.6. Aircraft entry/exit/reset/rendezvous points.

A3.8.7. Intercept procedures/contracts:

A3.8.7.1. Intercept altitude.

A3.8.7.2. Setups.

A3.8.7.3. Maneuvering contracts.

A3.8.7.4. Airspeed contracts.

A3.8.7.5. Termination parameters.

A3.8.7.6. Roll reversals.

A3.8.8. Breakup and recovery.

A3.8.9. Lost communications procedures.

A3.9. Recovery:

A3.9.1. Flight breakup.

A3.9.2. Type recovery (downwind, drag, and overhead).

A3.9.3. Landing (low approach, touch and go, and full stop).

A3.9.4. Traffic pattern rejoin (airspeed and position).

A3.9.5. After landing checks and taxi back.

A3.10. Emergencies:

A3.10.1. Abort procedures.

A3.10.2. Takeoff emergencies.

A3.10.3. General aircraft malfunctions.

A3.10.4. Physiological and rapid decompression.

A3.10.5. Bird strike.

A3.10.6. IMC procedures.

A3.10.7. Intercom, radio failure, and electrical failure:

A3.10.7.1. VMC location—NOTAMs and weather.

A3.10.7.2. IMC location—NOTAMs and weather.

A3.10.8. Emergency and alternate airfields.

A3.11. Questions.

A3.12. Individual Crew Briefs:

A3.12.1. Emergency ground egress.

A3.12.2. Abort.

A3.12.3. Takeoff emergencies and emergency return.

A3.12.4. T-1A training rules: time-out.

A3.12.5. Back-half profile:

A3.12.5.1. Route of flight.

A3.12.5.2. Specific area work and parameters.

A3.12.5.3. Transition base:

A3.12.5.3.1. Approach review.

A3.12.5.3.2. Patterns and landings.

A3.12.5.3.3. Active runway, airfield restrictions, cables, barriers, declared distance, and trouble T.

A3.12.5.4. Touch-and-go procedures.

A3.12.5.5. Wake turbulence.

A3.12.5.6. Recovery:

A3.12.5.6.1. Return routing and approach review.

A3.12.5.7. VFR leg procedures:

A3.12.5.7.1. Turn points and route of flight.

A3.12.5.7.2. Headings, altitudes, and times.

A3.12.5.7.3. Flight following.

A3.12.5.7.4. VFR arrival.

A3.12.5.8. IMC procedures:

A3.12.5.8.1. Anti-ice usage.

A3.12.5.8.2. Unusual attitudes.

A3.12.5.8.3. Spatial disorientation.

A3.12.6. Alternate single-ship profile.

A3.12.7. Additional items:

A3.12.7.1. Publications, equipment, and special clothing requirements.

A3.12.7.2. Weight and balance.

A3.12.7.3. Food and water.

A3.12.7.4. Jewelry and scarves removed.

A3.12.7.5. Mobile phones off.

A3.13. Questions.

Attachment 4

ORIENTATION/PASSENGER BRIEFING GUIDE

A4.1. Mission Objectives:

A4.1.1. Desired learning objectives.

A4.2. Ground Operations:

A4.2.1. Call sign and time hack.

A4.2.2. Takeoff time.

A4.2.3. Ramp safety—avoid intake and exhaust of engines.

A4.2.4. Foreign object damage (FOD) considerations.

A4.2.5. Switches and levers—**DO NOT TOUCH.**

A4.2.6. Seating.

A4.2.7. Headset, Y-cord, earplugs, and motion sickness bags.

A4.2.8. Strap-in, oxygen, and communications hookup.

A4.3. Flight Overview:

A4.3.1. Takeoff and departure procedures.

A4.3.2. Air work.

A4.4. Emergency Procedures:

A4.4.1. Ground:

A4.4.1.1. Emergency ground egress.

A4.4.1.2. Engine fire.

A4.4.1.3. Get away from aircraft—rendezvous for accountability.

A4.4.2. Takeoff:

A4.4.2.1. Abort—conditions.

A4.4.2.2. Continue—conditions.

A4.4.3. In-flight:

A4.4.3.1. Bird strike.

A4.4.3.2. Physiological:

A4.4.3.2.1. Ear and sinus block.

A4.4.3.2.2. Hypoxia.

A4.4.3.2.3. Airsickness.

A4.4.3.3. Intercom and radio failure.

A4.5. Prohibitions:

A4.5.1. Flame-producing devices fueled with propane, such as methyl alcohol butane lighters with see-through reservoirs.

A4.5.2. Explosives and flammable corrosive materials with toxic or irritating fumes.

A4.5.3. Narcotics, marijuana, alcohol, or any other dangerous drug.

A4.5.4. Use of any tobacco product on the aircraft.

A4.5.5. Mobile phones must be turned off and stowed from initial taxi until clear of runway after landing.

A4.5.6. Use of outlet/Ethernet ports (CSO-modified).

A4.6. Notes:

A4.6.1. Local orientation flight checklist complete (as applicable).

A4.6.2. TO 1T-1A-1CL/2CL-1 passenger briefing checklist complete.

A4.6.3. If the IP is not confident the individual fully understands emergency procedures, **DO NOT** fly the mission.

A4.6.4. Review current MAJCOM and local restrictions before flight.

Attachment 5

SORTIE DEBRIEFING GUIDE

A5.1. Mission Planning:

A5.1.1. Complete/accurate.

A5.1.2. Mission data cards.

A5.2. Sortie:

A5.2.1. Mission and training objectives met.

A5.2.2. Communications.

A5.2.3. Ground operations review.

A5.2.4. In-flight operations review.

A5.3. Miscellaneous:

A5.3.1. CRM.

A5.3.2. General knowledge/emergency procedures.

Attachment 6

PIT/UPT CHECKLIST PROCEDURES

A6.1. TANKER AIR REFUELING CHECKLISTS * Not required for subsequent rendezvous

A6.1.1. **Rendezvous Checklist:** (initiate prior to 15-minute call)

A6.1.1.1. Altimeters – SET (PF, PM)*

A6.1.1.2. Radios – SET (PM)*

A6.1.1.3. A/A TACAN – SET (PM)*

A6.1.1.4. MCT – COMPUTED AND POSTED (PM)*

A6.1.1.5. Turn Range/Offset – COMPUTED (PM)

A6.1.1.6. Back-up Timing – COMPUTED (PM)

A6.1.1.7. Radio Contact – ESTABLISHED (PF)

A6.1.1.8. Rendezvous Checklist – COMPLETED (PM)

A6.1.2. **Preparation for contact checklist:** (Receiver between 1NM and precontact)

A6.1.2.1. Autopilot Nav Mode – DESELECTED (PF,PM)

A6.1.2.2. TCAS – TA ONLY (PM)

A6.1.2.3. Preparation for Contact Checklist – COMPLETED (PM)

A6.1.3. **Post Air Refueling Checklist:**

A6.1.3.1. Post Air Refueling Report – AS REQUIRED (PF)

A6.1.3.2. TCAS – TA/RA (PM)

A6.1.3.3. A/A TACAN – AS REQUIRED (PM)*

A6.1.3.4. Radios – AS REQUIRED (PM)*

A6.1.3.5. Altimeters – SET (PF, PM)*

A6.1.3.6. Post Air Refueling Checklist – COMPLETED (PM)

A6.3. <u>LOW LEVEL CHECKLISTS</u>

A6.3.1. **<u>Low-Level Entry Checklist</u>** *Note: Accomplish in lieu of the descent checklist for low-level operations.*

A6.3.1.1. Crew Briefing - COMPLETED (PM)

A6.3.1.2. Altimeters - SET (PF, PM)

A6.3.1.3. Radio Altimeter/DH - SET (PF, PM)

A6.3.1.4. Windshield Heat - AS REQUIRED (PM)

A6.3.1.5. Heading and Attitude Systems - CHECKED (PF, PM)

A6.3.1.6. MCT - COMPUTED AND POSTED (PM)

A6.3.1.7. Belts and Harnesses - ADJUSTED AND FASTENED (PF, J, PM)

A6.3.1.8. Loose Items - SECURED (PF, J, PM)

A6.3.1.9. Exterior Lights - ON (PM)

A6.3.1.10. Ignition Switches - ON (PM)

A6.3.1.11. GPWS - SET (PM)

A6.3.1.12. Altimeter Altitude Preselect - ERAA SET (PM)

A6.3.1.13. Transponder - SET (PM)

A6.3.1.14. Radios - SET (PM)

A6.3.1.15. Radio/Baro Altimeter Crosscheck (1000 - 2000 AGL) - COMPLETED (PF, PM)

A6.3.1.16. Low-Level Entry Checklist - COMPLETED (PM)

A6.3.2. **Low-Level Exit Checklist**

A6.3.2.1. Navaids - SET (PF, PM)

A6.3.2.2. Altimeters - SET (PF, PM)

A6.3.2.3. Transponder - SET (PM)

A6.3.2.4. I gnition Switches - As Required (PF, PM)

A6.3.2.5. Low-Level Exit Checklist - COMPLETED (PM) *Note: Accomplish the Descent Procedures Checklist after the low-level and prior to approach/pattern operations.*

A6.4. UCT CHECKLIST PROCEDURES

A6.4.1. LOWLEVEL ENTRY CHECKLIST NOTE: ACCOMPLISH IN LIEU OF THE DESCENT CHECKLIST FOR LOW-LEVEL OPERATIONS.

A6.4.1.1. Crew Briefing - Completed (CP)

A6.4.1.2. Radio Altimeter/DH - Set (P, CP)

A6.4.1.3. Heading and Attitude Systems - Checked (P, CP)

A6.4.1.4. MCT - Computed and posted (CP)

A6.4.1.5. Belts and Harnesses - Adjusted and fastened (P, J, CSO, IN, O, CP)

A6.4.1.6. Loose Items - Secured (P, J, CSO, IN, O, CP)

A6.4.1.7. Exterior Lights - On (CP)

A6.4.1.8. Ignition Switches - On (CP)

A6.4.1.9. Altimeters - Set (P, CP)

A6.4.1.10. Windshield Heat - As required (CP)

A6.4.1.11. Radios - Set (P, CP)

A6.4.1.12. Radio/Baro Altimeter Crosscheck (1000-2000 AGL) - Completed (P, CP)

A6.4.1.13. Altimeter Altitude Preselect - ERAA Set (P, CP)

A6.4.1.14. GPWS - Set (CP)

A6.4.1.15. Transponder - Set (CP)

A6.4.1.16. Low-Level Entry Checklist - Completed (CP)

A6.4.2. LOWLEVEL EXIT CHECKLIST

A6.4.2.1. Navaids - Set (P, CP)

A6.4.2.2. Altimeters - Set (P, CP)

A6.4.2.3. Transponder - Set (CP)

A6.4.2.4. Ignition Switches - As Required (CP)

A6.4.2.5. Low-Level Exit Checklist - Completed (CP)

Attachment 7

T-1A TRAINING RULES

A7.1. Note: Brief items applicable to the mission in sufficient detail to prevent any misunderstanding between crewmembers. "Knock-It-Off" (KIO) and "Terminate" are terms used between aircraft during formation, air refueling, and air intercept operations. "Time-Out" is used by any crewmember within individual aircraft.

A7.2. Knock-It-Off (KIO) Situations. KIO will be called when safety of flight is a factor. Situations requiring a KIO include:

A7.2.1. A dangerous situation is developing.

A7.2.2. An unbriefed or unscheduled flight enters the working area and is detrimental to the safe conduct of the mission.

A7.2.3. Weather is below minimums for the area or route.

A7.2.4. Any aircraft exceeds maneuvering limits such that safety of flight is compromised (for example, over G, min airspeed, etc.).

A7.2.5. Loss of Situational Awareness.

A7.3. Knock-It-Off Actions:

A7.3.1. Acknowledge with call sign.

A7.3.2. Clear flight path.

A7.3.3. Cease maneuvering and climb and/or descend to a safe altitude.

A7.3.4. Maintain visual.

A7.4. Terminate Situations. Terminate will be used to discontinue maneuvering when safety of flight is not a factor. Situations requiring a Terminate include:

A7.4.1. BINGO fuel is reached.

A7.4.2. When desired learning objectives are met or are unattainable.

A7.4.3. Exceeding area boundaries.

A7.4.4. Below minimum altitude or within minimum range which does not compromise safety.

A7.4.5. Out of position (offset maneuvering cone, cell, etc.) with no expectation of expeditious return to position.

A7.5. Terminate Actions:

A7.5.1. Acknowledge with call sign.

A7.5.2. Clear flight path.

A7.5.3. Cease maneuvering and climb and/or descend to a safe altitude.

A7.5.4. Maintain visual.

A7.6. Time-Out Situations. "Time-Out" is the common assertive statement for use by all crew members. The use of "Time-Out" will:

A7.6.1. Provide a clear warning sign of a deviation or loss of situational awareness.

A7.6.2. Provide an opportunity to break the error chain before a mishap occurs.

A7.6.3. Notify all crewmembers when someone sees the aircraft or crew departing from established guidelines, the briefed scenario, or that someone is simply uncomfortable with the developing conditions.

A7.7. Time-Out Actions. As soon as possible after a "Time-Out" has been called, the aircrew will take the following actions:

A7.7.1. Safety permitting, stabilize the aircraft and ensure terrain clearance.

A7.7.2. The initiating crewmember will voice their concerns to the crew.

A7.7.3. The PIC will provide all other crewmembers with the opportunity to voice inputs relative to the stated concerns.

A7.7.4. After considering all inputs, the PIC will direct the course of action.

A7.8. Separation of Aircraft. Aircraft flying the offset maneuvering exercise inside the minimum range of 600 feet or forward of the 3/9 line will call "KNOCK-IT-OFF."

A7.9. Lost Sight/Blind (N/A - Cell Formation). Maneuver away from lead's last known position and transmit "blind" with (altitude). Lead will be directive to ensure altitude separation. If in IMC, initiate lost wingman procedures.